

Nature *Magazine*

VOLUME 33



NUMBER 5

MAY 1940

35 CENTS

Keep a Year's Issues of NATURE MAGAZINE in this Handsome Binder

"Where's the latest copy of Nature Magazine?" How often you have heard that question! And how often an answer like this: "Look on the chair . . . over in the corner!" Like as not, the much desired copy will turn up under the cushion in the window seat. And great will be the lament at torn pages and creased pictures.

Unlike most magazines, Nature Magazine is the sort you want to keep. Naturally issues accumulate. There's an easy solution to the problem of mislaid copies, unsightly disorganized piles of magazines. Get one of these binders specially prepared for Nature Magazine.

Just slip in the copies of Nature Magazine as they arrive. Snap them in with the little unbreakable hooked wire. This binding device while light is strong and sturdy, guaranteed to withstand all ordinary usage. The copies may be removed as easily as they are inserted. At the end of the year, remove the year's copies and have them bound. Your binder is then ready to serve another year, accommodating each issue as it arrives.



Always Protected and Right at Hand

This binder looks and handles like a book. It is a bound book in every respect except that you snap the magazines in the cover one at a time. It opens flat as a bound book, which makes it easy to handle and to read. It keeps the magazines handy for a year—or as long as you wish to retain them in the binder. Meanwhile the contents are protected from handling, tearing and from being mislaid or carried away. The binder is finely grained, dark green, gold embossed . . . a handsome addition to desk or library.



← Opens Flat
like a book

This De Luxe Binder only \$2

Your name stamped in gold for 50c extra

Send for your binder today before this copy of your magazine gets mislaid. We are so sure you will like this binder that we guarantee to refund your money if you are not entirely satisfied. Use the coupon here or, if you prefer, write us your order so as to avoid cutting the magazine.

AMERICAN NATURE ASSOCIATION
1214 Sixteenth St., N. W.
Washington, D. C.

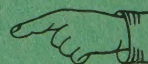
Send me _____ of your De Luxe Binders for NATURE MAGAZINE,
for which I enclose (check, P. O. Money Order) for \$ _____

Name _____

Street and No. _____

City and State _____

Stamp my name in Gold for the 50c extra.
Be sure to get it right, as printed below.





GHOST RANCH

Abiquiu, New Mexico



For conservative people who desire the best. Number of guests limited. Pack trips and all services at no extra charge. 60 miles north of Santa Fe. References exchanged.

MR. AND MRS. ARTHUR N. PACK
ABIQUIU, N. M.

Nature on the Air

A Nature study program being carried on outdoors is now taken indoors every Tuesday through cooperation of the National Broadcasting Company. It is the meeting of the Junior Nature School of the Air held in Rocky Mountain National Park, and first broadcast in 1938. The classes are under the direction of Park Naturalist Raymond Gregg. Portable microphones follow the classes about, and the dialog heard over the air is spontaneous. The broadcasts are released Tuesdays over the NBC red network from 11:30 to 11:45 a.m., Mountain Time.

Another Series of Nature programs are those directed specially to short-wave audiences from short-wave station WRUL of Boston. These programs are given by Max K. Gilstrap on Fridays at 7:30, Eastern Standard Time, under the auspices of the World Wide Broadcasting Foundation.

The Story of Diamonds

Did you know that diamonds were first discovered in Central India? Do you realize that the rough diamond is a homely object you might not pick up if you saw it lying in your backyard? These and many other interesting facts about this precious stone are told in *The Book of Diamonds* by J. Willard Hershey. This is a popular text discussing the lore of diamonds, their properties, tests to prove genuineness, and other details. Of course, some of the more remarkable diamonds are discussed, as well as the far from insignificant part they have played in influencing history. This most interesting book is published by the Hearstside Press, 148 Lafayette Street, New York City, at \$2.00.



You'll be pleased with the hospitality of the West, and amazed at its scenic wonders. No other section of the American continent offers so much variety of vacation enjoyment.

Visit the **GOLDEN GATE INTERNATIONAL EXPOSITION**. Go the Scenic Colorado Way on the new, streamlined, Diesel-powered **ROCKY MOUNTAIN ROCKET**. Every convenience known to modern rail travel. Return over the Golden State Route on the *de luxe* Golden State Limited or the *economy-luxury* Californian.



Rock Island offers Escorted and Independent All-Expense Tours to Colorado, Yellowstone, the Southwest, California and the Canadian Rockies.

Special summer fares. Go one way—return another. Liberal stopovers.

A. D. MARTIN, Pass'r Traf. Mgr.
Rock Island Lines
723 La Salle Street Station
Chicago, Ill.



MOUNTAINS & LAKES IN MAINE

HIGH in the Blue Mountains on Rangeley Lake is the perfect locale for your memorable vacation in Maine! Here you'll have the run of a private estate, with sandy beaches and a sporting golf course at your very door. Comfortable, modern rooms are ready for you, at a price you can afford, with a host of enjoyable activities centering at the Rangeley Lake Hotel.

What luxury of sleep at night, under blankets in the pine-scented mountain air—what happy, carefree life by day, under a friendly sun, free from humidity and hay fever! And how complete and satisfying your stay will be in this mountain and lake paradise! Let nothing stand in the way of your Maine vacation this year.

RANGELEY LAKE HOTEL & COTTAGES
CHARLES B. DAY, Managing Director P.O. BOX 4 RANGELEY LAKES, MAINE
Selected Clients
Write or wire your requirements today—full information and rates by return mail.
Photo Portland Flying Service

BATHING—In sparkling fresh water ... basking on the beach.

RIDING—A string of saddle horses at your beck and call.

BOATING—Canoes, rowboats, speedboats, aquaplaning.

FISHING—Forty lakes and ponds within 10 miles; biggest square-tailed trout in America.

TENNIS—Fast courts, tournaments during the season.

WALKING—Old Indian trails along the lake and through the hills, shaded by giant trees.

PINE ROOM—Serving the best in cocktails and thirst-quenchers.

DANCING—Program and impromptu dances in the Green Room.

THEATRE—Hollywood's latest at the "Lakeside," five minutes' walk from the hotel.

FOR CHILDREN—A safe playground; sand-boxes, swings, see-saws and slides.

SEAPLANE landing and private dock—24-hour garage service—bank nearby.

GOLF—No green fee for weekly guests during July, month of August guests staying over Labor Day.

Camera Trails

BY NORRIS W. HARKNESS

COBWEBS

A really good picture of a dew-sprinkled cobweb in the early morning is a valuable addition to the portfolio of any photographer whether as a Nature study or as a pictorial creation. But it is rarely that we can simply snap the shutter and have just what we want in such a picture. Most cobweb pictures are faulty in background and lighting. As the cobweb is usually neutral gray in color, it photographs best against a solid, dark background. Too often when we are making pictures, the natural background is so broken that our print shows large blobs of out-of-focus, lighter tones where the light has come through unevenly. As a general rule the web is fastened to the bush and it is impossible to place any dark material between the two, but we almost always can make the background darker and more uniform by placing a black cloth behind the bush and as near it as is feasible. I have on several occasions used for this purpose a square of 50-inch-wide black sateen with pockets sewed into the four corners. Sticks, such as the gardener uses to hold plants upright, are inserted in the corners and stuck into the ground so as almost to enfold the back of the bush, and the 50-inch square is big enough to supply a background for nearly the entire negative area. The result is a dark, but not black, area whose monotony is broken by the presence of the bush itself, and which furnishes a background of splendid contrast to the web.

If our picture is to be most effective, it will be made when the morning dew still shows and this calls for an early morning light effect. To get the proper glisten on the dew drops the light must fall, of course, directly on the web, and often in the early hours the web is in deep shadow where such an effect cannot be achieved. In this case, I have resorted to the use of a supplementary artificial light, either a flash bulb, or, when the web is near the house, a photo-flood bulb on a long cord. On two occasions, I have made use of an automobile headlight for the same purpose. The light may be flatter for this type of picture than we would generally use for most work, since there is little or no shadow or roundness to consider, and it is therefore possible to make these pictures with the sun or our artificial light almost behind the camera. The exposure, when determined with a meter, should be about one half that required for the bush alone, which is again due to the fact that we have so little shadow area to consider and that we do not wish to record great shadow detail. The resulting print, after normal development of the negative, will probably be best on fairly contrasty paper. If the owner of the web is at home, it will probably be better to give the exposure called for by our meter for the bush itself. In any event, the lens should be wide open to eliminate background detail as much as possible.



SCREECH OWL—PRIZE-WINNING PICTURE BY D. R. PRATT OF CANTON, OHIO

It sometimes happens that we find a splendid cobweb so late in the day that the dew is gone, but this need not stop our effort to make a picture of it. The ordinary atomizer filled with glycerine or glycerine and water enables us to spray the web gently and gain an excellent dewy effect, and I have found it possible to spray both the web and its occupant without driving her away. Water may be used for this purpose, but it falls off the web more easily and does not last as long as the glycerine. It is, of course, better to include in our picture area the whole web, since the natural shape of the web ordinarily makes a most interesting and attractive composition.

So far we have been thinking entirely of cobwebs outdoors, but often a rainy afternoon may be used to advantage in the cellar or attic, or perhaps out in the barn, tracking down the best cobweb formation we can find and making a really good picture of it. In this case we may have two pictures of the same web, the first made with the lens wide open, eliminating any possible background, and the second with the lens stopped down as much as possible to include the entire setting. In the first case the same rather flat lighting that worked so well outdoors will be splendid, but, when we are trying to include the stones or beams as well as the web itself, a sort of portrait lighting will probably be best. This involves one light very near the lens

of the camera and another well to one side, to give shadows and a feeling of the texture of the surrounding material. Naturally, when we show the background and it is obvious that the web is indoors, we would not expect to find dew or moisture on it, but if we use the lens wide open and are not showing any background at all, we may spray our "dew" on the web and simulate outdoor conditions.

These web pictures are not especially difficult to do, and they are tremendously worth while when we have made one that is particularly good. If you have not tried them, you will find that the results will more than repay the effort.

BACKGROUNDS

An argument has developed. From time to time I have suggested in this department the use of an artificial background in making pictures of flowers. Mr. Halliday, one of our persistent contest winners, has raised the point that making pictures of these flowers with an artificial background is "simply an attempt, and a poor one, to give a studio touch to something which should have a wild untouched setting." Dr. Anthony in our "Adventures in Photography" broadcast took the same attitude, but admitted that there may be another side to the question.

Let us grant that one type of floral picture should be made with as little disturbance of



ROBBER FLY—PRIZE-WINNING PICTURE BY H. B. GRAY OF LONG BEACH, CALIFORNIA

the setting as possible. But let us grant, too, that another picture of that same subject may be better in some cases if the extraneous material is eliminated.

As our eyes see a lady slipper, for example, we automatically separate the flower from its background by the difference in color. Our camera, though, would interpret all the colors in terms of various shades of gray, and too often the principal object in our picture is so ineffectively reproduced that real study is required to find just what the photographer was trying to picture. In such cases, then, something must be done and a filter will not always be the answer. Immediately up jumps the dilemma: shall I make this a picture of the lady slipper in its setting so that my photograph will show where and how it grows, and, if so, have I the right to clear away any of the surrounding leaves or plants? Or, do I wish to portray the lovely delicacy of the flower and the graceful curve of its leaves so that my study becomes one of the plant itself? Obviously, we have two picture possibilities and many arguments can be stated for and against either of them.

But let us consider for a minute another disadvantage of the "natural setting" arrangement. Generally such pictures are made at comparatively short distances. This means we have stopped down the lens, to some extent at least, in order to get the nearer and farther leaves sharp, but more distant things will still be out of focus as they should be. If it happens that any of those out-of-focus subjects are brightly illuminated, the result in the print is a blurred light area that is unpleasant. So perhaps a compromise is indicated. It may be that our background cloth will serve a purpose in the "natural setting" picture, too, since we can use it to throw a shadow over the background objects and prevent their interfering with our picture.

But differences of opinion make horse races and interesting photographic columns, so if you have an opinion on this question let us have it. The resulting argument may be a good thing for all of us and for our pictures.

THE MAY CONTEST

To date entries in the Camera Trails Con-

test have come from 32 states, Canada and Philippines, and it is most gratifying to see the number increase each month. It is even more pleasant to find the average quality of the prints improving as we go along, and the work of Dr. Anthony and Mr. Lootens, our judges, is becoming harder. This month they have picked "Screech Owl" by D. R. Pratt of Canton, Ohio, and "Robber Fly" by H. B. Gray of Long Beach, California. Both pictures are exceptional, and I congratulate their makers.

The runners up are Howard Watkins of Alexandria, Virginia, for a splendid shot of "Yellow Iris", and C. F. Rattenbury of Larkspur, California, for his fine picture of a gull.

The rules of our contest are simple. Just write your name and address plainly on the back of each print you wish to submit and mail it to Norris W. Harkness, 320 East 42nd Street, New York City. No entry blanks are necessary and no prints can be returned. The two winners will receive their choice of any book from the following list, and a chance at the final prize of a \$25 merchandise award from Willoughby's Inc., New York City.

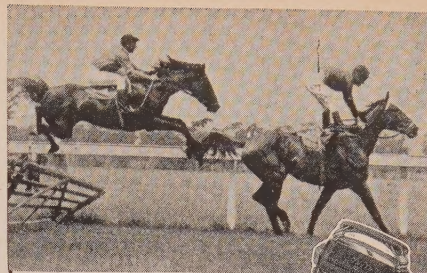
Remember that the November contest will be for flora pictures only and that all flower shots previously received will be re-entered for that month. Send your entries for this one special contest to me before September fifteenth.

In a future issue I'm going to try to explain what in each winning print caused the judges to select it.

Prizes may be chosen from the following: *Photo-Lab-Index*, by Henry M. Lester; *Nature Photography Around the Year*, by Percy A. Morris; *New Ways in Photography*, by Jacob Deschin; *The Fun of Photography*, by Mario and Mabel Scacheri; *Photography*, by Dr. G. E. K. Mees; *Finding New Subjects for Your Camera*, by Jacob Deschin; *Eyes in the Night*, by Tappan Gregory.

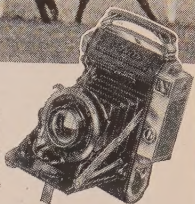
THIS AND THAT

Any Nature photographer who is really interested in making the best possible pictures will want at least a look at the series (Continued on page 253)



WELTUR for action shots

Freeze the fastest action on your film. Get those split second shots. Fast lenses—Compur shutters and coupled range finder give you an unbeatable combination for successful prize winning pictures. Two picture sizes— $1\frac{1}{8} \times 2\frac{1}{4}$ —16 on or $2\frac{1}{4} \times 2\frac{1}{4}$ —12 on No. 120 film. Literature free.



FREE CATALOG Cameras, accessories and dark room supplies. Write Dept. N-539 for your copy today.

BURKE & JAMES, Inc.

223 W. MADISON ST. CHICAGO, ILL.

NO INCREASE for WORLD'S FAIR!

Empire rates will begin—as always—at \$2.00 single; \$3.00 double. Send for **FREE** booklet D.

HOTEL EMPIRE

BROADWAY at 63rd ST.—NEW YORK
"At the Gateway to Times Square" E. B. BELL, Gen. Mgr.

PLEASE MENTION
NATURE MAGAZINE
When Writing Advertisers



Each May over 140 different kinds of birds are seen on our 250 acre estate . . . an enchanting vacationland.

You'll enjoy the outdoor recreation, indoor entertainment, atmosphere of serenity and Traditional New England Hospitality.

Mr. Maurice Brown, noted naturalist, has laid out our labelled nature trails.

A. Gordon Moody, Manager

THE NORTHFIELD and CHATEAU
EAST NORTHFIELD MASS.

have you ever had a
French Canadian
vacation?



For maps and descriptive literature, apply to your home travel agency, automobile club, Chamber of Commerce, railway, steamship or bus office, or write direct to

LA PROVINCE DE
Québec
TOURIST BUREAU
QUÉBEC • CANADA

NATURE MAGAZINE

PUBLISHED BY THE AMERICAN NATURE ASSOCIATION
To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and
Devoted to the Practical Conservation of the Great Natural Resources of America

IN THIS ISSUE

Cover Design.....	Rosalie Rees
Camera Trails.....	Norris W. Harkness 250
Indoors and Out.....	Howard Zahniser 255
Your National Parks—and You	
Victor H. Cahalane	257
Royal Ruby-Crown.....	John Lindsey Blackford 266
Canticle (Poem).....	Mildred H. Sisson 268
Our North American Moose.....	Vernon Bailey 269
See America First.....	273
Florida Behind the Billboards	
Elizabeth B. Lawton	277-284
As We See It.....	289
Things to Think About.....	290
Another Strange Wren Home	
Burdette E. Weymouth	291
Stream Gardening.....	Romaine B. Ware 292
The Opportunist.....	Diana Thorne 295
Our Precious Heritage (Poem).....	Riley Scott 296
The Wildlife Conference	
Richard W. Westwood	297
Wildlife at the Crossroads.....	Wilson B. Fiske 298
Far North and Far South in May	
Isabel M. Lewis	300
Restoratives (Poem).....	Oscar Ostlund 301
The School Page.....	E. Laurence Palmer 302
Under the Microscope.....	Julian D. Corrington 310

NATURE MAGAZINE,
PAST AND PRESENT,
IS INDEXED IN THE
READER'S GUIDE IN
YOUR PUBLIC LIBRARY

U. S. AND CANADA
ONE YEAR.....\$3
FOREIGN...\$7.75 EXTRA
TWO YEARS.....\$5
LIFE\$100

A. B. McClanahan, Advertising Manager

ADVERTISING OFFICES

New York—295 Madison Avenue
Washington—1214 16th St.
Chicago—203 N. Wabash Avenue
Philadelphia—323-325 Weightman Bldg.
Atlanta—Walton Building
Los Angeles—Western Pacific Building
San Francisco—Mills Building
Minneapolis—233 Radisson Hotel

NATURE MAGAZINE is published monthly, October to May, inclusive, bimonthly, June to September, inclusive, by the American Nature Association. Entered as second-class matter May 31, 1927, at the post office at Washington, D. C., U. S. A. Additional entry at Greenwich, Conn. \$3.00 a year; foreign \$3.75.

Publication and Editorial Office, 1214 16th Street, N. W., Washington, D. C. Additional Office of Publication, Greenwich, Conn.

Copyright, 1940, by
American Nature Association

Title Registered
U. S. Patent Office

THE ASSOCIATION

ARTHUR NEWTON PACK.....	President
Abiquiu, N. M.	
RANDOLPH G. PACK.....	Vice-President
Darien, Conn.	
RICHARD W. WESTWOOD.....	Secretary
Washington, D. C.	
JAMES A. O'HEARN.....	Treasurer
New York, N. Y.	
HARRY E. RADCLIFFE.....	Business Manager
Washington, D. C.	
DR. E. LAURENCE PALMER.....	Director, Nature Education
Cornell University, New York	

THE MAGAZINE

ARTHUR NEWTON PACK.....	Editor
RICHARD W. WESTWOOD.....	Managing Editor
EDWARD A. PREBLE.....	Associate Editor
R. BRUCE HORSFALL.....	Artist
HARRY E. RADCLIFFE.....	Business Manager

SCIENTIFIC CONSULTING BOARD

DR. LELAND O. HOWARD	
Retired Chief, U. S. Bureau of Entomology	
DR. WALDO L. SCHMITT	
Curator of Marine Invertebrates, U. S. National Museum	
DR. HARRY C. OBERHOLSER	
Senior Biologist, U. S. Biological Survey	
W. L. McATEE	
Technical Adviser, U. S. Biological Survey	
C. W. GILMORE	
Curator of Vertebrate Paleontology, U. S. National Museum	
VERNON BAILEY	
Retired Chief Naturalist, U. S. Biological Survey	
DR. PAUL BARTSCH	
Curator of Mollusks, U. S. National Museum	
DR. EDGAR T. WHERRY	
Wild Flower Preservation Society	
DR. WILLIAM M. MANN	
Director, National Zoological Park	

CAMERA TRAILS

(Continued from page 251)

of Eastman Kodaguides. They cover all types of exposures on most black and white films and Kodachrome for stills and movies, and even the most advanced photographer can learn a lot from them. If your dealer hasn't them write to The Eastman Kodak Company in Rochester, New York, for full information. Please don't forget to mention *Nature Magazine*.

Movie makers often pay great attention to the exposure and editing of their films and then project them on inferior screens. This always fails to bring out the full beauty and attractiveness of the films—especially with color pictures. So check up on your screen. The Raygram Corporation of 425 Fourth Avenue, New York, have introduced a new beaded screen that opens easily and collapses into its own box. Write to them for information.

If your camera has been stored away during the winter, do not forget to clean it thoroughly before you start the summer's shooting. Dust has collected on the surfaces of the lens and inside the camera itself. The lens should never be touched with anything harder than lens tissue, or a very soft, old cloth, and even then the pressure must be light. Optical glass is mighty soft, and a lens that is even slightly scratched cannot make truly sharp pictures. The inside of the camera can best be cleaned by loosening the dust with a small camel's hair brush and blowing out the dirt. While the house cleaning is going on, check the bellows for leaks and see to it that everything is shipshape. Do not oil anything, and if there are things that need repairing, or if stains on the lens do not come off easily, have a good mechanic do the work or send the whole thing to the maker or distributor.

For users of flash-bulbs with Kodachrome, the General Electric Company has introduced a new bulb, the #21-B, which is blue enough to work perfectly with the daylight Kodachrome without a filter. The 21-B does away with the need for the blue filter that was necessary with the older bulbs and makes color shots under poor lighting conditions as easy as any kind of picture. Your dealer has full information ready for you.

We seem to be talking about color steadily this month, but there is a new coloring outfit on the market for painting and tinting black and white pictures. It is announced by the Weimet Company of 358 Fifth Avenue, New York City, as the Gem Transparent Photo Colors, and retails at 25c.

"Way back when" I used to work for A. J. Haynes who is now the head of the Haynes Products Corporation, makers of various darkroom helps, and I know what kind of an engineer he is. A. J. has prepared a *Manual on Modern Film Development* which is now available to the readers of this department. Enclose a three-cent stamp with your request to Camera Trails.

Nature photographers who are using the Korelle Reflex will want to know about the new back for the camera to take the 828

(Bantam size) Kodachrome. The new back is priced at \$15, and the camera has to be sent to the distributor for its attachment. For information write to Burke and James, Inc., 223 West Madison Street, Chicago, Illinois. You will do well to ask at the same time for descriptive matter on the Solar Enlarger, Models I, II, and III. For negatives up to $2\frac{1}{4} \times 3\frac{1}{4}$, the Solar is not only a splendid enlarger, but has additional gadgets to make it a fine camera for many purposes. Do not forget to mention Camera Trails in your request.

The Utilo filters and sunshades are now being made in the U. S. A. They have the advantage of fitting the lens either separately or in combination—the filter fitting into the shade. Photo Utilities, Inc., of 10 West 33rd Street, New York City, the manufacturers of the Utilo line, have also announced supplementary lenses for close-up or distant work in the regular filter slip-on mounts and at filter prices. Write to the above company for the details.

Camera Trails exists for your benefit and maintains a service to help you solve your photographic problems. Send your welcome questions, or suggestions as to what you would like to have appear in these columns, to Norris W. Harkness, Camera Trails, *Nature Magazine*, 1214 Sixteenth Street, N. W., Washington, D. C.

The Audubon Camp

All signs point to another successful season at the Audubon Nature Camp maintained by the National Association of Audubon Societies at Muscongus Bay, Maine. Combining an outdoor vacation with Nature work in the field, it offers five two-week periods at a modest price. It is operated at cost for teachers, youth leaders and just those folks interested in Nature study, and the campers carry away both information and a memory of good fellowship. Information may be obtained from the National Association of Audubon Societies, 1006 Fifth Avenue, N. Y.

Allegany School

Combining college credit course with studies equipping teachers and leaders of young-people's groups, the Allegany School of Natural History will open its fourteenth season at the field biology summer school in Allegany State Park, New York. The school is conducted from July 1 to August 10 through the cooperation of the University of Buffalo, the Allegany State Park Commission and the Buffalo Society of Natural Sciences. An illustrated booklet may be obtained from Esther W. Eno, Buffalo Museum of Science, Buffalo, New York.

FOR FUN AND FINE LIVING CRESTMONT INN

EAGLES MERE, PA.
2200-ft. altitude

41st Season Opens June 13

Marvelous tonic air adding zest to living, whetting appetites for superb Crestmont meals . . . long, leisurely hours on beach, lawn, verandas . . . every facility for recreation or relaxation . . . that's your *Crestmont Vacation!*

Sporty 18-hole golf course
Tennis, lake sports, lawn bowling
Riding, hiking, scenic drives
Music, bridge, dancing

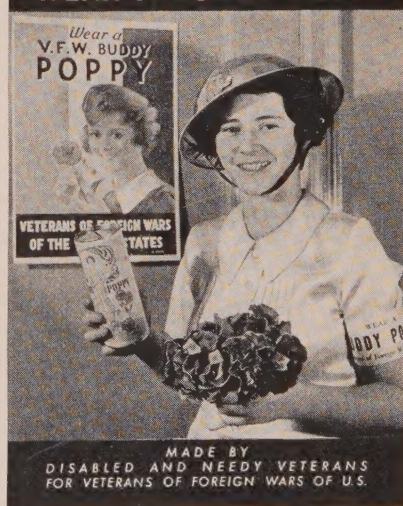
Children's playground with a trained kindergarten in charge. No mosquitoes!

Write for illustrated folder D.

WILLIAM WOODS, Prop., Eagles Mere, Pa.



WEAR A BUDDY POPPY



FOR GARDENERS WHO WANT THE BEST



Talking about Lilies—the so-called Regal Lily is in a class by itself. Once planted it lasts for years. Where it is happy (soil, sunshine and moisture) it grows bigger and better with the years. Our monster 10-inch-circumference bulbs insure immediate success. Compare!

6 bulbs for \$1.00 45 bulbs for \$5.00
20 bulbs for 2.50 100 bulbs for 10.00

Bulbs and prices represent bargains so great that we ask you to pay carrying charges. FREE folder of equal plant treasure values on request.

EASTERN BULB FARMS, Retail Dept., Syosset, N. Y.

**"GIVE MY BEST
TO THE FOLKS"**

"Hope to be seeing you soon." . . . "Gee, it's swell to hear your voice." . . . "We're all well here."

No great words of business or state are these—just the homey, every-day conversations that are America. The thoughts and hopes and remembrances that bind families and friends together. The flow of understanding that helps to make this a united nation.

Always the Bell System stands ready to help—to do its part quickly, cheaply, courteously, in the manner of a friend.

**BELL TELEPHONE
SYSTEM**



Indoors and Out

By HOWARD ZAHNISER

IT is said that patriotism is the greatest virtue of a citizen, and it has always seemed to me that the highest sort of patriotism arises out of love for the land—the landscape and all its attributes that are described together in that variously-used term “Nature.” For generations men have proved their patriotism with the classic reassurance that it is sweet and proper to die for one’s country, while there has often been a great deal of bitterness and apparent impropriety in the manner in which many men have thought it their duty to live for their countries. Memorials of some sort are certainly in order for those who, in spite of opposition, have helped preserve the landscape of their countries, the source of a high patriotism.

Our national parks and monuments, national forests and wildlife refuges, and State or privately-owned preserves of many kinds are evidence, it seems to me, of a true and high regard for this land on which we citizens of the United States live and travel, or as it has been said, “live and move and have our being”, yet I doubt that there are many of these that have been established and maintained except at the expense of some controversy and even beligerency. There is a basis for satisfaction, even optimism perhaps, in considering the chances to enjoy such areas that our children may have, but of course vigilance is a medium of exchange in this as well as other markets for public benefits. Anyone who promotes pride in our landscape and respect for efforts to save it from violence is certainly a public benefactor.

Not long ago a man and his wife, residents of the Netherlands, came to the office where I try to serve the Government and the public by disseminating information about the work of the Bureau of Biological Survey. These visitors from a foreign land listened to my account of our Federal refuge system with the same delighted and admiring amazement that my young son shows when I describe for him the unusual equipment of the giraffe. Their obvious pleasure at my descriptions of the popular interest in this country in conservation was something akin to an inspiration for me, not only stirring a greater interest in our outdoors but also giving an encouragement that we in this country have as good a chance as there is on the Earth to keep our wild gardens. And this effect, I believe, came less from my visitors’ accounts of contrasts with other lands than it did from their absolute enthusiasm at our own American accomplishments.

Perhaps it is patriotism that suggests the thought that such enthusiasm of visitors is due largely to the superlative excellence of our landscape, yet the simple fact is that it has been admired and loved for almost four and a half centuries now by men and women already familiar with other landscapes. “See America” may in reality be advice considerably more than mere travel advertising. The testimony of all travelers would certainly seem to indicate that we Americans—actually travelers ourselves who have more or less settled down—have for preservation a land-

scape of significance to the entire world.

One of America’s famous landscape architects—or artists, as I would say—Jens Jensen, came to this country fifty-six years ago when he was twenty-four years old. A recent autobiographical account of his “experiences with the soil”, published by Ralph Fletcher Seymour of Chicago under the title *Siftings*, shows plainly enough the influences of his early life in Denmark and yet locates his “own little world in the heart of Mid-America”, which when he arrived was “a new country, new to white men, where the Indians still roamed the plains and the buffalo enjoyed the freedom of vast prairies.” This landscape, the resources it adorns, and the way of living that both have made possible, have undoubtedly made of the immigrant Jensen as true and as patriotic an American as any of us. Certainly Jens Jensen has been an American longer than I have, and the fact that my immigration goes back through ancestry a century and a quarter farther than his makes no difference. The fact is that it is the land that has made us all Americans, and the moral is that it is the land which must be preserved to save our Americanism. Soil erosion, forest exploitation, and wildlife destruction are more insidious anti-American activities than Communism, Fascism, or foreign propagandizing. We foster self-preservation more truly, I believe, by conserving our natural resources—in bounty and beauty—than we do by combating the isms that will surely be survived or satisfactorily assimilated if only our land lives. An unspoiled outdoors is a pretty good safeguard against parlor pinks.

Mr. Jensen writes first on the thesis, “Art Has Its Roots in the Soil”, and then, after describing his “Early Impressions”, “Environmental Influences”, and “Studies”, pays his respects to “Our Native Landscape”. Remembering that he is a landscape architect by profession, it is especially significant to note his declaration: “There is no comparison between native plants and those imported from foreign shores.” The fine appreciation on which this statement is based is demonstrated well enough by references to only a few of the vivid seeings that Mr. Jensen recalls as in this one month of May—“the white oak with its golden tassels silhouetted against the blue sky of Missouri”—“the rosy head of a native crab-apple in full bloom”, in Illinois—the trailing arbutus singing of spring and singing of winter “in the woods of northern Wisconsin when snowdrifts were everywhere”. There are similar glimpses of other seasons with other settings, and they all testify to a sincere respect for the landscape. After describing as “Compositions” a few examples of his professional accomplishments for his much enviable clients, and writing of “Towns”—our small towns with their trees, open spaces, and nearness to country-sides—as models for urban plans for the future, Mr. Jensen returns in his concluding chapter, on “The Garden”, to what I choose to call his patriotic plea. He writes of our country as “one complete garden” and expresses a faith (Continued on page 309)



PHOTOGRAPH COURTESY OF THE NORTHERN PACIFIC RAILWAY

GREAT FALLS AND THE GRAND CANYON OF THE YELLOWSTONE

"Let each one of us work to preserve this priceless heritage of future generations. Let us pass it on intact and unspoiled, to our children and our children's children—for all time."

NATURE MAGAZINE

VOLUME 33 • MAY • 1940 • NUMBER 5

Your National Parks—and You

By VICTOR H. CAHALANE

THE flames of a campfire leaped and fell, casting fitful shadows on the faces of eight bearded men. Outside, in the chill darkness, their hobbled horses crunched the meadow grasses. On the opposite ridge a mountain lion screamed. From far away came a long-drawn bugle note; then another, more clearly. The bull elk were challenging. It was September 17, 1860, at the junction of the Firehole and Gibbon Rivers.

The little group of men had found that John Colter's incredible stories of the Yellowstone were largely true. They waded into a river that he had said flowed so swiftly over its rocky bed that the bottom was warm from friction. The heat was there, although it was caused by hot springs. They saw forests teeming with wildlife—mountains—canyons—petrified trees—waterfalls—lakes—craters—geysers—boiling paint pots. Few Indians ever dared to enter the Yellowstone. Weird tales of the sulphurous magic had been handed down from one generation to another. It was a fabulous country. Eagerly the men made plans to possess it.

Where would they stake out their claims? How would they divide the spoils?

Several proposals were made. Each man thought he had a more profitable and satisfactory plan. Suddenly Cornelius Hedges spoke above the tumult of suggestions.

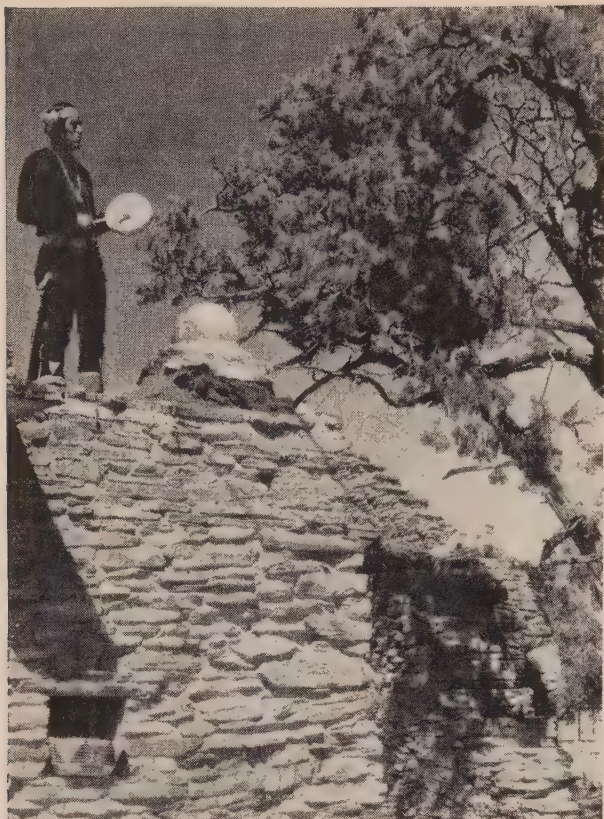
"Gentlemen, I do not approve of any of your plans. This is too great and marvellous a region to be cut up and exploited by a few men. There ought to be no private ownership of any part of this region. It should be preserved as a whole and be set apart as a national park for the American people."

An astonished silence struck his companions as he continued to speak, expanding upon his far-sighted convictions.



RHODODENDRONS BLOOM IN THE LUSH
FORESTS OF SMOKY MOUNTAINS PARK

This annual flower show of Nature attracts visitors
to this national park from all over the country



PHOTOGRAPH COURTESY OF THE SANTA FE RAILWAY

"Moreover, I feel that each one of us should make an effort to accomplish this."

For a few moments, the group remained still. Then, with the exception of one, they all agreed to the idea. Enthusiastically, they discussed ways and means of achieving this national park. Even then they did not fully realize the difficulties that would beset them—doubting scientists; an incredulous press; scoffing legislators; an indifferent public.

Nearly a year later, one of the group, Nathaniel Lang-

THE HISTORIES AND HOMES OF EARLY AMERICANS ARE PRESERVED IN OUR NATIONAL PARKS AND MONUMENTS

Here is a Hopi Indian at Hopi House on the South Rim of the Great Canyon. Mesa Verde Park is undoubtedly the greatest Indian relic maintained by the Park Service

ford, published in *Scribner's Magazine* an article describing the wonders and magnificence of Yellowstone. Critics railed and condemned him. One labelled him the "champion liar of the northwest".

Undiscouraged, the little group of men continued to push the idea, belaboring press and Congress alike. As a result of their efforts, the Yellowstone country was set aside on March 1, 1872, "as a public park or pleasure-ground for the benefit and enjoyment of the people". Thus was born the great system of national parks.

As time went on, other spectacular areas were reserved for the perpetual enjoyment of the American public. With the spread and change of civilization, however, the first yardstick of specifications became no longer adequate. There was felt a growing need to preserve archaeological, geologic and historic values that were threatened with destruction.

In 1907, the "Antiquities Act" provided the legal road to a broader and greatly enlarged system of parks. Thanks to the men who drafted and enacted this legislation, people may now enjoy the quiet majesty of the redwoods in Muir Woods National Monument. They may marvel at the thrifty methods of plants accumulating water in the desert of several southwestern areas, like the Joshua Tree and Organ Pipe Cactus National Monuments.

They may study vast geological exhibits that have been reserved for the research of the more intellectual. Even the frivolous-minded visitors, however, find a new thrill skiing and tobogganing over the hills of "sand" in White Sands National Monument. The ground may be pure gypsum, but it's just sand to them!

The "Antiquities Act" has also made it possible to save the prehistoric remains that would otherwise crumble under the attacks of time, or the raids of pot hunters. Pueblo Bonito, Casa Grande, Montezuma Castle, Walnut Canyon, Wupatki—these and other relics of original Americans will continue to remind us that we are only recent tenants in an old country.

The milestones in our progress are also worthy of note, however. Many early Spanish, French and English settlements are now marked as historic monuments. The Historic Sites Act of 1937



PHOTOGRAPH COURTESY OF THE DEPARTMENT OF THE INTERIOR

JOSHUA TREE

These tree yuccas of the desert are preserved in the Joshua Tree National Monument in California

A VARIETY OF ACCOMMODATIONS IN THE NATIONAL PARKS ARE NECESSARY TO PROVIDE FOR THE MANY VISITORS
 Here visitors to Yellowstone National Park watch the eruption of Old Faithful from the porch of Old Faithful Inn, one of the hotels in this famous park

has continued the work of preservation and has greatly enlarged its scope.

Battlefield sites and military parks commemorate historic places where armed strife decided the future of a nation. As far as possible, these battlefields have been restored and students of history can now see the obstacles that ruined some generals' maneuvers and made others successful. Sham battles are fought from year to year. The Blues and the Grays advance and retreat. It is not only an exciting drama for the watching crowds, but a poignant reminder of the tragedy of civil war.

Easier, swifter means of transportation and more time for leisure have created a demand for still another type of national recreational area—the parkway. The first one, named the Blue Ridge because it follows or closely parallels these mountains, was begun in 1935. Designed to afford a safe, scenic route between the two largest Eastern parks—Shenandoah and Great Smokies—it is now more than half completed. Another, the Natchez Trace across Tennessee and Mississippi, will follow an early "high road" of Indians and whites that is now all but obliterated. The leisurely automobilist of these parkways will experience unfolding panoramas of beauty without being assailed by soap, cigaret and hotel signs. He can also enjoy a pleasantly informal education from interesting markers and museums along the way.

"Where can we swim?" is the first question many tourists ask.

The most recent type of national park area was occasioned by the thousands of "No Trespassing" signs that fenced most of the nation's seashores away from the average citizen of the present and future generations. Dazzling white sands, fringed by blue waters of the Atlantic and Gulf of Mexico, will soon be available to the public. Large enough to afford relief from the elbowing crowds of Coney Island, these beaches of Cape Hatteras and Santa Rosa will be unmarred by discordant "barkers", merry-go-rounds and shooting galleries.

Inland people who cannot afford the time and expense to make long trips to the wilderness national parks may find, conveniently close, Recreational Demonstration Areas. Under the Nation-

MOUNT RAINIER

The great curving course of Emmons Glacier seen beyond Sunrise Lodge and the cabins in the valley



PHOTOGRAPH COURTESY OF THE NORTHERN PACIFIC RAILWAY

al Park Service, these once sub-marginal lands have been organized, protected and provided with facilities for camping, swimming, hiking and Nature study. Already they have been the woodland parks for thousands of underprivileged children and adults.

From the beginning of the first park, the policy of administration, as stated by law, has been:

"— the preservation, from injury or spoilation, of all timber, mineral deposits, natural curiosities, or won-

PHOTOGRAPH COURTESY OF THE NORTHERN PACIFIC RAILWAY





PHOTOGRAPH FROM THE U. S. DEPARTMENT OF THE INTERIOR

NOVICES OFF TO ATTEND SKI SCHOOL IN YOSEMITE NATIONAL PARK

Winter sport enthusiasm has grown to the point that insistent demand for opportunity is answered by facilities in several of the national parks, notably Yosemite and Mount Rainier

ders within said park, and their retention in their natural condition." (Natural condition should be underlined.)

Although subject to continuous attack, this policy has remained fundamentally unchanged throughout the years.

Most important for preservation in its natural state is, of course, the scenery. Our parks contain some of the most spectacular panoramas, waterfalls, cliffs and caverns in the world. They must not be ravaged by disfiguring structures, buildings, road scars or billboards. Some of the mistakes of early days have survived, but gradually are being eliminated. Necessary administration and living areas have been rebuilt—old, ugly, inappropriate and unharmonious buildings torn down and replaced by others that serve their functions while blending into the landscape. Conspicuous road construction has been hidden, or the road re-routed where it would not be noticeable.

To present a natural picture, forests are allowed to grow to maturity and to decline until decay completes the cycle. Constant vigilance is maintained to prevent timber from being cut surreptitiously for private fireplaces or business enterprise; to keep shrubbery from being dug up to adorn somebody's front lawn or supplement a nursery; to preserve rock formations from being taken away for souvenir garden curios or parlor mantels.

Although fire has undoubtedly been one of the natural factors that have shaped our forests through the ages, it is no longer entirely a natural factor but an increased hazard in a crowded white-man age. One of the most difficult and strenuous tasks of the park rangers is to locate and put out fires before much damage is done.

While safeguards are established to prevent the moun-

tains, valleys, streams, forests, plants and natural phenomena from being altered or destroyed, it is necessary to protect the animals that live on these areas.

We all recall the reckless destruction of wildlife before the days of national parks. Throughout the country it was slaughtered, sometimes to the vanishing point. Thousands of buffalo, elk, antelope and deer were slain and left to rot in the sun. Many a creature was shot for a single steak, to get a canine tooth for a fancy watch fob, or just for the sheer lust of killing.

The reaction was violent. Desperately attempting to bring back the hoofed animals, many of the early army officers in charge of the first parks carried on a continuous persecution of predators. Wolves, cougars and coyotes were shot, trapped and poisoned. Eventually their prey came back in numbers, but some of the carnivorous species had been extirpated. The animal populations became unbalanced and the results in overpopulations of elk, antelope and other grazers on depleted ranges became shockingly apparent. Almost too late, it was realized that predators are an essential as well as an interesting factor in the wildlife world.

Today, no animals are coddled. They all have equal rights. Every species is protected and a nearly complete and natural picture of primitive life is found in most of the national parks.

Unnecessary disturbance of wildlife is avoided by careful planning and tactful regulation of visitors. The location of every new path, road, or bridge is thoroughly studied to prevent more than minimum damage to the habitat. Old trails are cunningly diverted to avoid hiker



ROCKY MOUNTAIN SHEEP IN GLACIER NATIONAL PARK

PHOTOGRAPH COURTESY OF THE GREAT NORTHERN RAILROAD

In these great reservations wildlife is allowed to live naturally and there find complete sanctuary, assuring the preservation and increase of several seriously depleted species. Man's attempts to influence wildlife population are avoided and only resorted to in emergencies

disturbance of rare nesting species. Bathing beaches are planned only where steep cliffs, banks or trackless sands will separate inquisitive bathing beauties and noisy swimmers from the waterfowl colonies. Fishing in some small lakes is prohibited when necessary to protect breeding and nesting grounds of rare species.

A friend of mine was once accosted by a booming and loudly-tailored traveler.

"Where you from, buddy?" he asked.

"California," answered my friend, obligingly.

"Thasso, huh? Well, I bin there once. Say, I went through the most gosh-awful country. Hotter'n blazes. Yuh ride all day and never see a thing. Ever been to Death Valley?"

"Sure, there's a national park there."

"A national park! Cripes, what a place to build a park!" spat the man in disgust.

For those who cannot comprehend the grandeur of space, beauty and color, the fascination of ancient civilizations, or the study of earth's forces, most national parks will still have a wildlife appeal. Some people may prefer a roller coaster to a mountain, a shower bath to a waterfall, or a stroll on a boardwalk to a glorious hike through the forests. But there is hardly a person who is not beguiled by the clowning bear, the lordly moose, the begging chipmunk and the capering squirrel.

As a matter of fact, the park animals sometimes have to be protected from human kindness. Many a chipmunk, deer and bear has lost his natural appetite and ability to gain an honest living. Attracted by new odors and strange flavors, they drift in from the depths of the

forests and take up a panhandling career on the camp grounds and highways.

Where are our original shy, hard-working bears? Like the other half of the world, many have gone on relief. It is a disorganized and injurious relief, however. Thousands of tourists have loved and spoiled them. They have been fed such countless chocolate bars, peanuts and ham sandwiches that they now accept and demand such fare as their due.

Although tourists are warned not to feed the bears, and to keep all food and garbage in bear-proof containers provided by the Park Service, a minority persist in "treating" the animals, and leaving temptingly fragrant foods in their tents and cars. Sometimes a bear tears down the tent, smashes in the car window, or rips off the car top to secure the delectable morsels that he thinks are just as much his as if they grew on a blueberry bush. Sometimes he unintentionally, or intentionally, rips skin and flesh from a proffering hand. Then the injured and regulation-breaking tourist rushes to the administration office (perhaps stopping at the hospital for treatment) and demands immediate redress. It is always the bear who "pays and pays". He begins by paying with indigestion, and, finally, with his life.

In early days irate wilderness dwellers were wont to apply crude and terrible methods of chastisement to marauding bears. One offending grizzly was slaughtered by firing an explosive shell into his chest. Another was lured to a small garbage heap and blown to atoms by concealed dynamite. I remember that, in even more recent years, a bear thief was strung up by his hind legs before a jibing



PHOTOGRAPH COURTESY OF THE MILWAUKEE ROAD

THE EDUCATIONAL SERVICE OF THE PARK SERVICE IS POPULAR

Here we see visitors at Old Faithful Inn off to meet the Ranger Naturalist for a tour of "geyserland" that is packed with the drama of geological forces and other Nature interest

audience and spanked on his nether regions so that he didn't sit down—or up—for a week.

Today a bear accused of committing petty larceny, camp breaking, or biting and clawing, is tried by a jury. First he must be properly identified. (Some suspects are marked with a dash of paint.) The circumstances are examined. If found guilty, he is either paroled or trapped in a traveling hoosegow and deported to a far corner of the park, out of reach of temptation. If he returns and resumes his old life of crime, he is regretfully and expeditiously shot.

The real cure of this problem child depends upon the cooperation of his human friends.

How useful are our national parks?

It is a common human weakness to fail to appreciate good fortune. Although some six or seven million people visit the parks each year, this is only a small percentage of the American public. Few others have any conception of the importance of the national park idea. Even the park "addicts" who have visited many of the areas several times, often do not have full realization of the opportunities available. Instead of locking up resources, as has been so often charged, the parks are primarily utilitarian in purpose. They are meant to be used as a part of the machinery of our national life.

As a source of recreation and inspiration, our national parks have few equals in America, or even in the world. I do not need to remind Americans of the Grand Canyon of the Colorado—the greatest example of erosion; of Sequoia National Park, with its world's largest and oldest trees; of the "rain forests" of the Olympics; of the breathtaking High Sierra views; of Mount Rainier lying against the blue sky like a snow-covered giant.

America's national park system is the largest outdoor recreation ground in the world—twenty-one million acres at the present time. The term "recreation" is used here in a broad sense to connote that which re-creates the Toms, Dicks and Harriets of the American public. When Tom

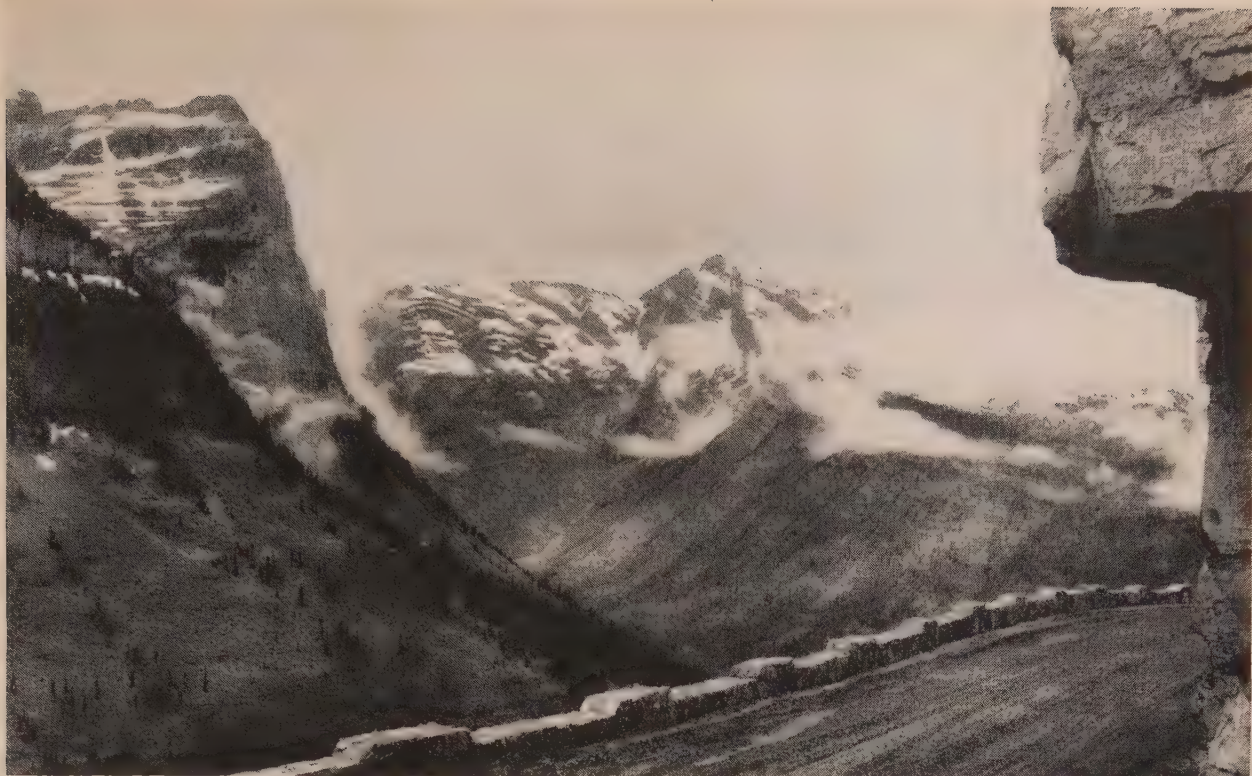
looks over the ruins of Pueblo Bonito while an archaeologist describes the life of the primitive people who once lived in these rooms, he indulges in an educational activity that is also recreational. He is gathering in fresh stimuli, and increasing his mental resilience. He is as completely recreated as Harriet when she goes whooping down an icy slope in Yosemite, sliding on an ash can cover. Both obtain refreshment and stimulation of their natural capacities through a change of activities and scene.

For those who need physical activity to brush away the cobwebs, the parks afford ample opportunity. Summertime visitors find trails leading out of camp grounds and other living areas, inviting them to walk through the woods or climb over mountains. Those who want to wander over these trails at less cost of shoe leather and energy may find saddle horses to do the work.

Swimming is a popular pastime in many parks, although at high elevations it is a bit chilly most of the year. Those who prefer a warmer and longer season, may best find it at a national seashore.

Although summer in our northern and high mountain parks is brief, Americans are finding out that the outdoors is delightful in winter. Thousands of visitors are enjoying the exhilarating exercise of snow sports. On the slopes of Paradise Valley, Mount Rainier, and on the sides of Mount Lassen, are located two of the most popular cold-weather resorts. In Badger Pass of Yosemite, where snow accumulates from October to June, enthusiastic crowds ski, snowshoe, coast and toboggan.

When the National Park Service was established in 1916 to administer the parks and monuments, one of its first steps was to introduce an extremely popular educational service. Informal talks around the campfire explain the park environment and the processes that shaped it. Tom, Dick and Harriet may go on caravan trips, each in his own car or on a bus. Under the guidance of an experienced specialist, they learn why things are as they



PHOTOGRAPH COURTESY OF THE GREAT NORTHERN RAILROAD

VISITORS TO GLACIER PARK MAY SEE THIS VIEW OF HEAVENS PEAK FROM THE HIGHWAY

While this great park is largely accessible only by trail to chalets and tent camps, a spectacular highway joins Lake Macdonald with Lake St. Marys and the eastern side of the park

are. They find that the Grand Canyon was not made by a Scot digging for a lost dime. They see for themselves that the Yellowstone geysers are neither operated by pumps nor shut off promptly at 6 P. M. on week days and 5 o'clock on Sundays.

They may take "Nature trails" by themselves and read the labels that explain why dogwood is harmless, and neither barks nor bites. Trailside exhibits in inconspicuous cases relate the stories of large-scale geologic processes or other phenomena. Museums and libraries offer material to those who are inclined to take their sciences or history at all seriously. In fact many of their exhibits are so dramatically interesting that even the average tourist—or a Poppa and Momma with four or five children—trail through in happy abandon.

Excited tourists learn why volcanoes belch. They stare into live volcanoes. They watch fresh lava flow. They follow the processes of earth building from bare recent rock through the formation of soil and the successive stages of plant growth upon it. They complete the cycle by studying dying and dead volcanoes, and startling examples of erosion or earth destruction.

Such outstanding opportunities for education naturally are widely recognized by teachers and scientists. Colleges and universities fortunate enough to be near a park use it as an outdoor laboratory. Distant colleges arrange summer classes in one park, or traveling sessions that cover several parks. The Yosemite School of Field Natural History, founded in 1925, is a summer school for the training of naturalists. Several junior Nature schools offer courses to many children who enjoy outdoor classrooms.

As sites for the study of earth-building processes, Hawaii, Grand Canyon, Lassen Volcanic, Yosemite, Yellowstone and other national parks are extraordinary. Many principles of vulcanology, mineralogy and geology have been formulated by study of their hot springs, volcanoes, rock strata, and other phenomena.

Although man can often modify the environment to suit his purposes, his changes unfortunately are not always beneficial but are sometimes extremely destructive. One case is the well-known relationship between vegetative cover and flood control. Others are more obscure and less well understood. The national parks are available as checks on methods of land use elsewhere. Already they contain practically the sole remaining primeval stands of numerous types of forests. They will thus stand as check-plots against which the forester can make comparisons and avoid undesirable changes in managed woodlands. The parks' near-normal animal populations may form a standard against which the future biologists may measure alterations in the fauna under long periods of management and semi-domestication.

The Park Service has done everything within its power to carry out the original policy—"preservation from injury or spoilation of all timber, mineral deposits, natural curiosities, or wonders within said park, and their retention in their natural condition". Unfortunately, the policy is subject to constant attacks by self appointed "improvement committees", and large commercial interests.

As more and more visitors flood into the parks, demands for all kinds of "improvements" arise. First and most numerous have been requests for elaborate structures

and big-city amusements. All facilities are now confined to living areas and it is intended that they shall not encroach upon or spoil the wilderness. Comfortable hotels for the affluent and luxury-minded; cabins and campgrounds for those with more modest purses or simpler tastes. Electric lights are available in most places, and shower baths, restaurants, grocery and drug stores. But inner spring mattresses, and hot-and-cold running water are not enough for those who want their wilderness sugar-coated. They have no patience with the policy that accommodations should be as much in keeping with the surroundings as possible.

"There are no finger bowls," one woman scolded last summer.

"I had dinner at —— Hotel," writes a female with jaded palate. "There were only four courses. The food was good, but the selection poor. You should investigate. My father was Judge ——!"

"You don't have enough plugs for electric razors," the 1939 male population complained.

"You should pipe your hot springs to heat the cabins and save fuel," reprimands an American of Scotch ancestry.

"When I was in your park last year," a large and vociferous woman stormed, "I had five children. Five children, and *I could not rent a washing machine!*"

"Why don't you have golf courses?" demands the sparsely-haired man who pines for his tees and greens in the midst of towering mountains and Alpine meadows.

"You must put railings along your paths," timorous, weak-kneed ladies wail.

"Your furniture is bleak," admonishes a "would-be decorator", who doesn't like the rustic style. "Why don't you paint it? I *never* had to sleep in an unpainted bed before. Put up some nice drapes and hang some pretty pictures."

The body of John Colter rolls over in his grave. "Next year," he groans, "they'll want to put petticoats on the bears!"

Not satisfied with crusading for fripperies in the living areas, some malcontents wish to stream-line the wilderness.

The more effete visitors request sumptuous swimming pools of warmed water enclosed in buildings fitted with ultra-violet-ray glass. No chills. Pleasantly sensuous. However, as with other requests, the park policy is to reject any proposal that will introduce an unnatural atmosphere of luxury. An elaborate structure of this kind, which was erected without proper authority in one of the parks, has been ordered to be removed. Natural beaches or swimming holes are preferred. Sometimes streams are checked by low dams—baffles, really—and boulders are slightly rearranged to allow the visitors to swim in natural surroundings.

"What good is a volcano if it erupts only once in a century or so?" inquire the "efficiency experts". Since it is futile to ask a mountain to take off its cap and spout lava, they request that tunnels be excavated into Lassen Peak so that they may see how the uneasy giant looks inside.

The crowning glory of Yosemite Valley is its waterfalls.

But they dry up during the long summer and fall. Their creeks are fed only by melting snowfields. Each year, the administration is asked to build reservoirs above the valley rim where water could be stored and fed to the falls on the Fourth of July and Labor Day. "Special showings could then be given to the Elks, Kiwanis, Lions and Women's Clubs, and crowds of people could enjoy the surplus waters that go to waste in the spring."

"The forests are monotonous," criticize several "improvement committees." Many of them propose to introduce exotic trees and shrubs to the western park wildernesses. The species would probably fail to thrive, of course, but if any should succeed the native character of the landscape would be destroyed.

Letters proposing to plant Asiatic chestnuts in the eastern parks, to replace the blight-killed American variety, fill a large file. The Park Service is still unimpressed, however. Would it any longer be a "natural" forest? Can any foreign tree fill the place they vacated? What biologic complications might not arise?

The majority of organizations (or so it seems) want to plant memorial trees. "President Wumpey was such a great man; his name should be on a bronze plaque on the biggest tree." A society of veterans' daughters wishes to plant in one park a tree for every Civil War veteran from that state. Since the records reveal that there were a hundred thousand, it would be necessary to move out a part of the original forest.

"Why not have variety in our wildlife?" question sportsmen who want a new thrill. "You should import some interesting foreign deer."

"Coyotes, foxes, badgers, skunks, weasels and minks are murderers!" announce horrified citizens. (Citizens who themselves devour the flesh and blood of animals once or twice a day.) "Poison these killers! . . . Kingfishers and water ouzels eat fish. . . . Shoot them!" Although motivated by kindly intentions, these *reformers* are without conception of the interrelationships of animals, or of the fact that artificial control spoils and upsets the natural picture.

"Your animals are going to waste," declare many of the hunting fraternity. Minor schemes are offered to take this species or that species for restocking, for a special, private hunt, or any one of a dozen other reasons. Greater schemes propose that an entire park be thrown open to hunting by the public.

"Roads! Roads! Roads! We must have more roads! Bigger and better roads!" clamor the over-enthusiastic chambers of commerce, automobile associations and contractors. "Faster roads! Roads into this wilderness. Roads into that wilderness." These besiegers do not realize that when processions of automobiles, clumps of filling stations, gasoline smells, restaurants and hot dog stands come, wilderness is gone. The parks would be honeycombed with concrete if there were no far-sighted administration to curb this mania. Unfortunately sometimes there is not enough support for the officials serving the public. Now and then they have been forced to give way to the pressure, and, sadly, another wilderness has disappeared.

To some extent the same pressure has been applied to the park trails. "Indian-trail" track has no appeal for many people. They demand that the paths be made straight in spite of the traditional delights that a winding path is supposed to offer. Of course the grading and ditching of a trail destroys the wilderness atmosphere through which it passes.

When a zealous trail-crew foreman in one national park overworked a wild, wandering path into a straight, graded track, even a hard-boiled woodsman packer protested.

"I'm not going to run my string on that there trail," he drawled. "Some day I'd meet a motorcycle that 'ud scare every cayuse into Kingdom Come. It 'ud take me a week to catch 'em." A week was too optimistic, and the foreman was instructed to clear paths and not to make tracks suitable for headlong racing by motorcycles or pack-trains.

Fortunately, so far, the Park Service has usually been able to resist the attack of "Nature-Aiders". No Roman or Turkish baths; no golf courses; no tunnelled volcanoes; no pipes running out of waterfalls and hot springs; no exotic forests; no trees draped with memorial badges; no "half-breed" deer!

The greatest perils to our National Parks come from large commercial interests. Because of the increasing economic value of the parks, many attempts are made to plunder them. Although they are of tremendous benefit to

HISTORIC PLACES ARE NOW BEING PRESERVED

Fort Jefferson National Monument in Florida is one of these. Part of the moat wall was carried away by a hurricane



PHOTOGRAPH COURTESY OF THE DEPARTMENT OF THE INTERIOR

the general tourist trade, and especially to all business in the vicinity of the various parks and monuments, some commercial interests continue to attack their territorial integrity and to try to convert one or another of their factors to private use.

"A dam! Why not? We shall flood only twenty or thirty miles that will never be missed. And it will mean millions of dollars. Dollars! Now there's something you can get your teeth into!" shouts the greedy materialist, the man "who knows the cost of everything and the value of nothing". Countless attempts have been made to secure power sites and sources of water for irrigation or domestic supply. One disastrous raid was achieved. The result is the Hetch-Hetchy reservoir. An unnecessary desecration, it ruined the second finest Yosemite in existence. Yet the sacrifice may not have been made in vain. It remains a glaring example of past mistakes and thus may prevent future repetition. Continuous threats at another great

resource—Yellowstone Lake—have not yet succeeded. We can be sure, however, that demands to dam this lake will not cease. For decades, would-be sugar beet growers have coveted its water for irrigation.

"Why raise a fuss about low water levels, 'unsightly' beaches and water-killed trees in the summer?" they ask. "Won't we be raising beets? Millions of beets!"

Well, which do we want? Natural beaches and shoreline; waterfowl and habitat; Molly Island, where pelicans have been living for centuries? OR BEETS?

"Lumber! Why not cut down these forests? Six or seven months and the land will be green again," promises a pot-bellied Mammon. "Millions of board feet going to waste. Rotting! If you let us cut them down, we can leave a few growing along the roadside. The dudes won't know the forest isn't there!"

In 1916, under the stress of "neutrality" for the Allies

and need for ships to win the First World War, lumbermen turned to the Olympic Peninsula. More than 600,000 acres of it were in the Mount Olympus National Monument, then under the administration of the Forest Service. The latter recommended, and President Wilson signed, an Executive Order reducing the Monument to less than half its original size. Some of these magnificent, irreplaceable forests were cut. It took twenty-two years to get the area under the protection of the Park Service. In 1938 it became a part of Olympic National Park.

For years the livestock industry has looked with avid eyes on the grass "going to waste" in the parks. "Going to feed a lot of wild animals that you can't skin or eat," they complain. "No-count creatures fattening themselves. We could raise a million head of sheep and cattle there!"

Although stock grazing is allowed only "where it is not detrimental", the pressure and delirium of World War days admitted it to sacred places. (Continued on page 303)

Royal Ruby-Crown

By JOHN
LINDSEY
BLACKFORD

*Illustrated by
R. Bruce Horsfall*

WHILE crowns are in discard or rest precariously upon royal heads, there is at least one princeling we know who continues to wear his crimson coronal by divine right, and with as gay and untroubled a heart as ever may be found. The flaming coronet of the ruby-crowned kinglet would be a feather in anybody's cap, but adorning this midget majesty it is a living jewel. His, too, is the voice regnant of April's budding woods and May-time's verdurous bowers.

When spring blossoms into all its glamorous loveliness and I listen to the explosive happiness of these melodious mites, I am thinking that were I a kinglet for a day I should have the time of my life.

March, Moon of Awakening, has left to the Moon of Green Grasses woodlands that are stark and bare. The leafless trees are still seemingly lifeless save for swelling buds when the kinglet's joyous exuberance first bursts upon our consciousness. His gay clamorous medley opens with an overture in mid-April, bursts into a swelling, exultant, almost tumultuous chorus in May, and then under the press of family affairs subsides to a finale in June.

Of this boisterous harmony, of this returning royalty, what shall we say—such songs, such singers? Nay, more indeed. Truth is, though spring has arrived, the ruby-crowns have nearly captured the show.

Yet he is no playboy, this merry chap, for between songs, or perhaps we should call them outbursts, he must catch a living and win a mate.

That ever there need be pursuit of the lady is more than surprising. The gleam of his crown gem as the sprite displays it, though it flash from yards away, captures our

hearts on the instant; but the brilliant disclosure seems only to lose him time in the chase. Always, too, we are charmed when the crimson crest shines unexpectedly as the emotional little fellow pauses in his spring caroling. That he does win her we know, whether or not by virtue of his ruby crownlet one may only speculate. Nevertheless, by some persuasion, she builds in May or June a nest at a moderate height, ordinarily about twenty-five feet from the forest floor in an evergreen. The little basket of moss, lichens, fine bark strips, and grasses, softly lined, is lashed semi-pensile fashion to branchlets near the end of a bough, and becomes a cradle for from five to nine miniature eggs. Pale buffy or white, they are sprinkled about the larger end with light

brown. This royal treasure she conceals expertly within the dense needle cover of the conifer.

Once in the manner of her leaving a kinglet disclosed to me her unfinished nest in a Douglas fir. As I was to observe later, approach to the site was cautious and unhurried. Alighting in a birch she would proceed with assumed nonchalance from twig to twig up and along its leaning bole. Apparently she was absorbed in the search for insects; then followed a short flight of three or four feet to the fir, and a climb of several branches leading from its northwestern side around to a bough opposite. Down this branch she would move with her bit of material, finally to busy herself near its drooping tip among the clustering needles.

The psychology of her departure was evidently based upon the intuition that any ill-intentioned observer would be interested, when following her flight, in where she



"BENDING FAR OVER ON HER LOW BRANCH, SHE STUDIED THIS NEW DIVERSION."

might be going rather than in where she had been. At all events her going was habitually by a vertical drop or dive from the nest to within a yard or a little more of the ground. After a quick leveling curve she would speed away into the surrounding grove.

However successful this slight artifice may have been in deceiving the casual onlooker, the plummet-like departure became through frequent repetition an act that attracted attention from one continuing in the vicinity.

Meanwhile, as has been stated, spring's midget master of ceremonies fairly shouts his joyous approving song; but with the immediate prospect of so sizable a family before him, who cannot but marvel at such unrestrained enthusiasm?

Song variation among kinglets from region to region, ornithologists agree, is considerable. About the writer's home in north-western Montana the full-voiced notes of the songster are rendered rapidly in three connected phrases. They begin with an unsyllabized, yet highly pleasing utterance of notes followed by a warble of similar nature,

the whole completed by a series, long or short, the rendition of which I can best interpret as: *cheewee—cheewee—cheewee—cheewee*.

One must remark, of course, upon the diminutive size of the performer and the extraordinary volume of his song. But more enthralling is the happy delight of the singer in his own effort, and the full-toned quality of that music, which so arrests the ear and retains for itself in the heart of the listener a desire to hear it continued, despite its so frequent repetition. Blithe and gladsome, madcap and merry, it reveals to us more of the spirit of the mite than do the melodies of most other birds.

When the ruby-crown reaches the height of his rapture the final phrase may include as many as sixteen *cheewee* notes. Often several notes of this group may be given separately, seemingly as an afterthought, or again as though our vocalist were trying the purity of his tones ere he launched himself ardently into the full song.



"... HER GOING WAS HABITUALLY BY A VERTICAL DROP OR DIVE FROM THE NEST ..."

Either the lyric or the briefer measures may be interrupted abruptly by the scolding *churr-churr-churr* that the nervous imp emits whenever a hawk slides across the sky, or it occurs to him that his woodland world needs a warning. Yet whatever the reason for it, his own alarm cannot be heeded by one with such a pressing occupation, and you will hear him heralding the bursting new season a moment or two after.

Only a few miles from where I live I have heard kinglets deliver the same song in its first two phases as described, terminating it however with an entirely different scale of notes. Farther away, on the shores of a mountain lake, I have listened to another but slighter variation in the kinglet chorus. Many times more distant, on the other hand, although in the same general area, I heard at other points the song to which I am accustomed. But from the recordings of ornithologists one may expect to hear, in widely different sections, not only merely alterations but wholly unlike efforts from members of the several forms.

At higher elevations, in the Transition and up into the Boreal zones, the song season of the kinglet may be expected to correspond with the later arrival and advance of the seasons. Nevertheless, at lower levels, he of the ruby crownlet does not lapse into complete silence after late June. Occasionally throughout July and August, at odd times of the day and particularly during those few refreshing hours that follow upon the dawn, we catch brief fragments of the familiar rondel. It were as though the singer would bring back those blissful days of his return. But it is summertime, he is listless, he forgets; and the song ceases ere it is well begun. He has failed—somehow the paradise that he proclaimed is only the prosaic world once more, and the hesitant notes come now as if in recollection.

Delineating broadly the empire of the eastern ruby-crown, whose breeding range reaches from Quebec and Michigan north to the limit of tree growth in the Dominion, extends westward beyond the continental divide,

where he is found among the mountains as far as the coastal ranges.

The kingdom of the western ruby-crowned, or ashy kinglet, stretches in summer from central British Columbia to the San Jacinto Mountains of Southern California, while in breadth it reaches from our Pacific littoral east to include the western borders of the great intermountain basin. The Sitka kinglet holds diminutive sway from Yukutat Bay in Alaska to British Columbia, wintering south to middle California, sporadically to Santa Barbara. "There are few problems more fascinating or difficult than the distribution of the races of *Corthylio calendula*," states one authority, adding that one key to their solution is a study of the songs.

In migrations, on their way to and from nesting areas in northern and mountain forests, this pygmy royalty is more in evidence. In Montana east of the divide, when en route to Douglas fir forests of the upper Transition and Canadian life zones, they appear in numbers in the cottonwood groves and willow thickets of the prairie region, claiming attention by their migratory minstrelsy. Likewise in April and May they are abundant in valleys of the western slope as they journey home to our vast woodlands of tamarack and fir.

I have had experience with the ruby-crown's gray-gowned queenlet's indifference. It was a morning buoyant with the moist freshness of May, and she was fluttering, humming bird-like, endeavoring to secure green aphids that clung to the terminal leaves of a lacy birch bough.



"... THE FULL-VOICED NOTES OF THE SONGSTER ARE RENDERED RAPIDLY IN THREE CONNECTED PHRASES."

By a gradual and unobtrusive approach I came at last near to her where eventually she perched upon a small, bare branch no more than four feet from the ground and myself no farther away. It was evident that for the moment her curiosity was as great as my interest. Indeed it was, I believe, nothing more than that which permitted me so intimate an audience.

How long we might have observed each other thus closely I cannot say, but there had been a stir in the grass and old leaves upon my final approach. Now the rustling was repeated, a familiar, most unimportant sound that scarcely deserved notice; yet it was not so with the lady in question.

Bending far over on her low branch, she studied this new diversion. In fact so obvious was her absorption that I could not but feel her entire disregard of my own presence. And this for a toad! For such, indeed, was the author of the dry, rustling hop-hop-hop in the dead grass stems and litter at my feet.

After long gazing at the toad and without another glance at me, she presently darted away into the glistering, new greenery of the trees.

When the kinglet, that olive-green, crimson-crowned elf of the evergreen and leafy bowers, and his demurely-clad wifelet depart from the greater portion of our northern wilderness, we do not forget them or that ecstatic chorus.

Always, on his return, we shall join with him, this red-capped cheer leader of our spring vocalists, in a rousing welcome to blue-eyed April and the new year.

Canticle

By MILDRED H. SISSON

Wild carrot, chicory and clover
Where the hill is curving over;

Red and white and blue they fly
Brave beneath their country's sky;

Lace for Anne among her candles,
Satin ribbons for her sandals;

Filigree and stars and gems
Exquisite for diadems;

Lilt and laugh and life of summer
Dancing there for each newcomer;

Mystery and miracle—
From the ground this canticle—

Wild carrot, chicory and clover
Where the hill is curving over.

Our North American Moose

The largest living member of the deer family; a noble and valuable animal

By VERNON BAILEY

THE ALASKAN MOOSE, AS PAINTED
BY CARL RUNGIUS

The largest of all moose, dark brown and black. Some sets of antlers have measured as much as seventy-seven inches across. This race is found in southern Alaska, northern British Columbia, Yukon Territory and Northwest Territory. Illustration courtesy of the U. S. Biological Survey



THE closely-related Old World elk is not very different from our moose, but the early explorers did not bring the name over with them. They adopted the Indian name of moose, which somehow seems to fit this big, soft-nosed, bewhiskered, shovel-horned dweller of the forests of our North Country. Some people try to call our elk a wapiti, and our moose an elk, but it is too late to change these mixed-up names, so let's make the best of them.

The moose is not a beautiful animal, but he has strength, character, individuality, and he stands out among our native mammals somewhat as Abraham Lincoln stands out among and above our leaders of men. The old bull not only inspires but often commands respect, and many a hunter has been glad to go up a tree and stay there until the moose got hungry, or tired of waiting, and stalked away. The experienced hunter or photographer, if he is wise, keeps near a tree or some protection, since the patience of a bull moose, when his wide, many-pointed antlers are hard and sharp, is often short and uncertain. That is why many moose pictures, including some of my own, are small and indistinct, even when enlarged to the

limit. Some of the close-ups taken by George Shiras, Norman McClintock, Arthur Pack, the Finleys and the Wendell Chapmans send shivers up and down one's spine at the chances taken, and the real danger ignored.

This species has fared better than most of our large game animals, and its original range, from Nova Scotia to Alaska, has shrunk but little. This is in part because it inhabits the Canadian Zone, mainly north of agriculture and sparsely populated, in part because with its size and fighting qualities it has few enemies to fear besides man. To some extent it may be also because the greater part of its range lies in Canada, where laws to protect game seem to command respect.

Hewitt in his monumental work on the conservation of wildlife of Canada says, "We have no large game animal in the possession of which we have greater reason to be proud. . . . It is eagerly sought by the big game hunter and sportsman. To the Indians of our northern woods it furnishes both food and clothing. . . . This fine animal will afford thousands of Canadians a great incentive to seek recreation in the forest solitudes that form its haunts."

In the Adirondacks, the Upper Peninsula of Michigan,

and northern Wisconsin, the moose were all killed long ago, but there are still considerable numbers in Maine, on Isle Royale, and in northern Minnesota. The smaller, grayer Shiras moose is found in the mountain sections of western Wyoming, and Montana, and northern Idaho. In Alaska, Yukon Territory and northern British Columbia and Mackenzie the largest and darkest of all the forms is still abundant, but locally in great danger from over-hunting.

With proper protection moose increase rapidly because twin calves are the rule after the first calf of the two-year-old mother. Three young are rare. The mother moose generally raises all of her calves, and this means a doubling of the stock each year, an increase comparable to that of deer and sheep and more rapid than with elk or cattle.

Some authors claim monogamy for the moose, but informed hunters and naturalists generally agree that the old bull who has won his spurs remains with one cow for only a short time, and then hurries to find others. During September and October the bellowing or calling of a cow moose soon brings a bull, who approaches cautiously with low grunting and rattling of his antlers on the bushes, to let her know who is coming and, at the same time, to urge her not to be afraid.

During the moose season the hunter often takes advantage of this well-known habit and by imitating the call of the cow moose on a birchbark horn lures the bull to close quarters. This, however, is taking an unfair advantage, and should not be encouraged except for the photographer.

Moose hunting by the white man generally means the quest for a magnificent trophy. But the fact that a moose affords delicious meat, generally considered better than beef, is also of importance. To the Indian hunter as well as the settler or prospector, the fact that an old bull may furnish eight hundred or a thousand pounds of meat may form the main incentive.

Hunting the moose has enough of difficulty and danger to afford some thrills to even the experienced veteran. None of our deer is more intelligent, wary and suspicious, or possessed of keener senses of smell and hearing. The moose's eyesight often leaves it in doubt until the air brings positive identification of an enemy. Then the animal



A MINNESOTA MOOSE

The animals are still found in considerable numbers in this section. Illustration from U. S. Forest Service

will disappear like a shadow into the forest, or if it be in the open will strike a swinging trot that carries it at race-horse speed for many miles without halt or hesitation, across meadows, marshes, and streams and ponds. With four long, slender, spreading hoofs on each foot the long powerful legs are equipped with what amounts to snowshoes, bogshoes and webbed feet.

Moose are not only powerful and rapid swimmers but in summer are almost as aquatic as the beaver. Much of their summer food comes from the bottom of lakes and streams where, free from insect pests, they feed with great relish on succulent water plants—water-lily leaves and stems and tender shoots, eel grass, pondweed and no end of lush vegetation. In soft mud their long legs sink so deep that their

heads are easily thrust under water for their food, and in deeper water they do not hesitate for a moment to go entirely under and to graze on the bottom. In mid-summer, on Northern Lights Lake in Minnesota, I watched for an hour seven moose in different parts of this beautiful forest-bordered sheet of water, four of them with their backs at the surface near shore, and three out in deep water. Here they would submerge and stay under water for ten, fifteen, twenty or thirty seconds at a time, then come up not far away and remain on the surface for half a minute to get their lungs well filled with fresh air.

Just how the big flexible nose and lips serve to gather the water plants and tuck them into the mouth without letting in the water can not be observed, but it is plain that gathering and chewing their food under water presents no problem.

Again, in a canoe or motor boat, as one comes around the bend of a deep still river in the forest, an old bull moose is sometimes surprised close by with just his rump or his back out of the water, and one can wait until his broad shovel horns come to the surface, and his eyes and ears and nose begin to function. Swiftly and powerfully he moves toward shore until his feet strike bottom and then the river fairly explodes as he makes for the timber in a cyclone of spray and flying water.

In winter, over most of their range, with only three to five feet of dry snow, moose travel freely in search of the best food, mainly willow bushes. But where the snow gets



THE SHIRAS OR YELLOWSTONE MOOSE, PHOTOGRAPHED IN IDAHO

It is smaller than the Eastern moose and lighter in color. Its range is in the Rocky Mountains in Wyoming, Idaho and Montana. Photograph courtesy U. S. Forest Service

to be six or eight feet deep they may be forced to yard for awhile. In deep snow they paw down to the willow tops and keep trails well travelled, but as soon as a thaw softens and settles the snow the moose strike off in long strides that carry them through even deep snow with easy speed.

I once made a 100-mile snowshoe trip in western Montana in early March to try and find the moose still in their yards, but a Chinook wind had softened and settled the snow, and I found by their tracks that they had scattered over the woods and mountain sides from the now deserted trampled yards in the willow thickets along the streams. Here the willows were eaten down to short sticks as thick as my fingers, and the thickly scattered moose pellets, an inch and a half long, oval and made of coarse chewed willow, packed into "briquets" much like the smaller pellets of the bark eating porcupines, gave a good record of the winter food habits.

In summer the soft greenish droppings of the moose are more like those of cattle and show a diet of grass and other succulent vegetation. Just what kinds of plants are preferred is not well known, except that the moose feed largely in meadows or in the water. Jack Carr in *Outdoor Life* for May, 1910, says that his pair of young Alaska moose, "were very fond of apples, oranges, bananas and grapes", habits not to be encouraged, but showing a wide range of food acceptance. Charles Sheldon in Alaska, and Adolph Murie on Isle Royale, have shown that a great variety of vegetation is eaten by moose. Winter foods include willow, aspen, alder, maple, birch, hazel, pin cherry,

mountain-ash, dogwood, service-berry, thimbleberry, rose, red-berried elder, sumac, balsam, cedar, yew. Summer foods comprise willows, honeysuckle, raspberry, thimbleberry, grasses, sedges, rushes, ferns, water lilies, pondweeds, cowslips, jewelweeds, mushrooms.

Moose calves, one, two, or three, are born in some secluded forest retreat, generally in May. Long of legs, awkward and clumsy in appearance, they soon develop strength and speed. As Jack Carr's Indian tersely expressed it, "Moose, him four days old, boy him fifteen years old, sometime ketchum moose. Moose eight days old, Indian plenty skookum, fast run, maybe ketchum. Moose two weeks old, Hell no ketchum". With their mothers' care and their own speed they have no need of spots or any concealing coloration other than to match the shadows. In a few days they are running with the mother, and they keep by her for a year or more, sometimes yarding with her and her younger calves during the second winter.

Moose antlers, with their many-pointed, broad, shovel blades, are heavier and more powerful than even the longer and more branching antlers of the wapiti. They are not used for shoveling snow, but purely for defense and conquest. They are both lance and shield to the mature bulls, and with a driving force of 1000 to 1300 pounds of enraged fury back of them they are irresistible to any antagonist of less power and inferior armament. Before the mating and fighting season is over in mid-October there are generally some points broken off and some scars on the

tough moose hides. Then when the fervor of love and war cools down, the bulls wander away to recuperate and in January the useless antlers drop off and are left lying in the snow.

In April a pair of new antlers begin to grow from the flat stumps of the old, and, if possible, a bigger and better pair of weapons develop slowly during the summer months; at first soft, full of blood vessels and covered with short velvety fur, hardening and becoming broad, many-pronged and bony by mid-summer, and in August fully hardened and dried. In September they are ready for peeling, polishing and testing on tough saplings and for more strenuous use.

While the head with a fine pair of antlers is the prized trophy of the hunter, the valuable store of excellent meat has been for ages past the mainstay of native people in the moose country. It can remain so for all time if used economically and wisely under proper management. There has been some waste—illegal killing out of season, market hunting, and meat left in the woods or fed to dogs, all of which must be stopped if these valuable animals are to remain with us.

Moose hides have supplied leather, moccasins, netting for snowshoes, clothing, bedding, and shelter for primitive man, pioneers and prospectors for ages back, and have even been brought into commercial use to some extent, proving the value and the importance of wise conservation of the source of supply.

Domestication of the moose has never gone far but there are many cases on record of captured moose calves becoming as gentle, tractable and intelligent as any of our domestic animals. Many times they have been trained to driving and handling in harness, single and double, and have proved their speed and endurance. There are great stretches of north country where dogs are the only means of rapid travel, and one wonders why more moose have not been brought under control and use.

The distribution, protection, management, and increase of the moose are matters wholly within our own power and discretion. They do not naturally thrive outside of their own native northlands in Canadian Zone, but this is where they fit into Nature's scheme of things and are most needed. Unless we are willing to see our northern forests become depopulated, lifeless, barren and worthless we must preserve and develop the native life for a permanent supply of meat, leather, fur, game and fish, the



WHERE MOOSE ARE FOUND

Here we see the ranges of the three recognized forms of moose in North America

food supply that will make possible the utilization of its valuable forests, minerals and equally important recreational attractions.

With the moose, as with the caribou and musk ox, the greater interest and value lies with Canada and she has gone far in meeting her responsibility. Still there are extensive areas within the United States, and especially in Alaska, where the moose should be better protected; to other suitable ranges they could easily be restored.

RECOGNIZED FORMS OF AMERICAN MOOSE

EASTERN MOOSE, *Alces americana americana* Clinton, 1822. *Type locality* probably western Adirondacks, N. Y. Size large; legs very long; ears large; nose

broad; antlers broad and thin with many points; neck heavily maned; throat with pendant bell or wattle. Color: dark gray to black. Measurements: (by E. T. Seton in Quebec). Total length 9 feet 6½ inches; tail 2½ inches; hind foot 31½ inches; height at shoulders 6 feet; spread of antlers 57¾ inches. Others have measured in height 7 and 7 feet 4 inches at withers. Weights: as high as 1300 pounds; partly by weight, and partly estimate. Range: Nova Scotia to Alberta in Canadian Zone.

YELLOWSTONE MOOSE: *Alces americana shirasi* Nelson, 1914. *Type* from Snake River, four miles south of Yellowstone National Park, Wyoming; adult male collected Dec. 11, 1913. Characters: Smaller than the eastern moose and lighter colored, more gray and brown, less black. Upper part of back and neck and head yellowish or rusty brown, lips and ears gray, lower parts, throat and upper legs blackish, middle part of legs dull buffy, lower part more brownish. Measurements: of type total length 8.3 feet, hind foot 30 inches. Range: Rocky Mountains in Wyoming, Idaho and Montana.

ALASKA MOOSE: *Alces americana gigas* Miller, 1899. *Type* from Tustumena Lake, Kenai Peninsula, Alaska, adult male, collected in September, 1898. Characters: Size largest of all the moose, color dark brown and black; upper parts a mixture of black and wood brown; sides, mane, breast and buttocks clear black, middle of belly, legs and ears light brown, ears buffy inside. Measurements of type, total length 10 feet; tail 4 inches; hind foot not given; height at shoulder 6.5 feet; spread of antlers, 52¼ inches. Larger heads from Alaska have measured 74, 76, and 77 inches across antlers. Range: S. Alaska, northern B. C., Yukon Terr. and western Northwest Terr.



Notch-top Peak seen from the trail that runs beside a mountain stream in Rocky Mountain National Park, Colorado. Photograph courtesy of the Burlington R. R.

SEE AMERICA FIRST

In the past "See America First" has been a slogan with a suggestion that wisely has been adopted by many. Today it is the answer to the question—"Where will I spend my vacation?" With most of the rest of the world

torn by wars, and with oceans places of debatable safety, America is the place for Americans.

Nowhere in the world are there such places of beauty, set aside for the enjoyment of the people, than in the United States and Canada. From Acadia National Park off Maine's northern coast to the rugged splendor of Yosemite Park in California; from the great mountain mass of the Great Smokies in North Carolina and Tennessee to the white-crowned grandeur of Washington's Mount Rainier; from the fantastic Carlsbad Caverns in New Mexico to Canada's great Jasper Park in the Cana-



Coming up the Yaki Trail to the South Rim of the Grand Canyon. Sure-footed mules carry the visitors safely along this breath-taking route. Photograph courtesy of the Santa Fe Rwy.



Carved a mile deep by the erosive forces of river, storm and wind, the Grand Canyon of the Colorado is one of Nature's greatest spectacles. Here we see it from the North Rim. At Bryce Canyon, Nature has indulged in fantastic sculpture of the colorful rock formation. Photographs courtesy of the Union Pacific Railroad.





dian Rockies, stretch many miles. Yet at all these far-flung points lie reservations of beauty, and, in between them, many more.

If time and pocketbook permitted, one might plan a grand tour of the National Parks—with here and there a side trip to some of the many National Monuments—there to store up memories of places of great beauty, and to return with a realization of how great is the country in which we are so fortunate to live.

First, perhaps, we would turn west to Rocky Mountain National Park, with its quarter of a million acres of rugged mountains and lovely lakes on the Front Range of the Rockies in north-central Colorado. While in that state we would find contrast in Mesa Verde National Park, where the cliff dwellings of earlier Americans are preserved. Then we would move farther westward to that great gash in the earth's surface, the Grand Canyon of the Colorado, with its nearby wonders in fantastic Bryce Canyon and monumental Zion National Parks.

On, then, to California, where Sequoia National Park preserves a great area in the high Sierra; where Yosemite's three-quarter million acres offer vacation experiences for every taste; where Lassen Volcanic National Park has preserved one of the

Zion National Park offers many views of rare beauty. Such is this one from Observation Point on the east rim of Zion Canyon. Yosemite yields many a picture, but perhaps none is so beautiful as that offered by Yosemite Falls. Photographs courtesy of the Union Pacific Railroad.





greatest fields of former volcanic activity in the United States. Similar in origin, but utterly different in character, Crater Lake Park lies not far over the line in Oregon.

We might do well, here, to turn east into Wyoming for a visit to the great wilderness peaks of Grand Teton National Park, and to nearby Yellowstone with its myriad wonders of geysers, hot springs, lakes, rivers and canyons. Itineraries would differ, but in ours we will move west again to majestic Mount Rainier, and the new Olympic National Park on the Olympic Peninsula. From Seattle, we may take passage for the breath-taking trip up the Inside Passage of British Columbia for Alaska, there to visit Mt. McKinley Park and Glacier Bay Monument.

Returning from Alaska to Prince Rupert, British Columbia, we could turn east to Jasper National Park, with its great ice fields and its glorious Maligne Lake; go south, over the just-dedicated highway, to Banff and Lake Louise; then on south to our own great Glacier National Park, a fitting climax to any visit to the National Parks of America.

Across Jackson Lake the visitor gets one of the most impressive views of the Grand Tetons, rugged and alluring to the hiker and climber. Photograph from the Union Pacific. Yellowstone National Park is a place of varied beauty and surprise. One lovely spot is Tower Falls. Photograph from the Chicago, Milwaukee, St. Paul and Pacific Railroad.



THE FIRST GLIMPSE OF FLORIDA AS YOU CROSS THE GEORGIA LINE ON U. S. 1

Florida Behind the Billboards

By ELIZABETH B. LAWTON

Chairman of the National Roadside Council

Conservation and reclamation of the rural roadsides of America are subjects that concern every citizen. The American Nature Association has, through Nature Magazine and numerous bulletins, presented the facts of the existing situation. Most recently it has cooperated in a study of Florida's roadside conditions, and in this special insert makes the facts available and offers suggestions for public education and a legislative program.



YOUR GREETING AT THE STATE LINE ON U. S. 41

NEW ENGLAND and California lead the movement today for the protection of natural beauty along state highways. Deriving a large part of their income from tourist money, these states are awake to the fact that beautiful highways increase travel and are a tremendous commercial asset.

But what about Florida? Florida is another great tourist mecca. The tourist industry ranks first in Florida, leading both manufacturing and agriculture. In 1939 tourists spent \$291,000,000 in the state. Yet no one hears of any state movement in Florida to protect the natural beauty of its highways.

Can it be that Florida has no scenery worthy of protec-

tion? Not if we are to believe the beautifully illustrated folders that flood the North, describing Florida as the "Garden Spot of Beauty", the "Land of Flowers and Warm Sunshine". The warm sunshine is indeed there (except in the "unusual" seasons) and the flowers and beauty are to be found in many gardens and cities. But what about the highways? After all, the highways are the real show-windows of the state and it is the views from the highways that largely determine the traveler's impressions and memories of Florida, or any other state.



ATTRACTIVE ENTRANCE ON U. S. 319—SEVENTEEN MILES TO TALLAHASSEE BEAUTIFULLY DEVELOPED BY THE STATE



YOUR FIRST IMPRESSION OF FLORIDA IF YOU ENTER BY U. S. 17—SOON FOLLOWED BY . . .

. . . A BRIEF GLIMPSE OF THE BEAUTY OF FLORIDA ROADS WHERE THE STATE HIGHWAY DEPARTMENT HAS ITS WAY



If you want to know what Florida highways look like to the average newcomer, lay aside your illustrated folders, get out your candid camera and take the trip from the Georgia line on U. S. 17 down to Miami. A slender gateway at the state line is your formal welcome, but it is wholly ineffective against the striking mass of billboards just beyond. Once past this unpleasant commercial greeting, you enter a stretch of clean and really attractive road, a fine example of the roadside development program of Florida's State Highway Department, which has done its best to create a pleasing first impression of the state. A two-hundred-foot right-of-way, flat slopes well covered

with green, and native trees saved in irregular groups give a truly park-like appearance. Perhaps, after all, Florida is beautiful. But disillusionment is swift. The parkway vanishes within a mile as you pick up the first of the unending procession of signs, billboards and roadside commerce that are to accompany you all the way to Jacksonville, and, indeed, almost without interruption, to Miami.

The nearer you approach Jacksonville, the thicker the conglomeration. On the last seventeen miles signs average one every four seconds; between

Jacksonville and St. Augustine, one every three and one-half seconds, and the south approach to St. Augustine for two miles carries forty-five signs to the mile. The "noisome pestilence" continues most of the way to Miami.

On the three hundred miles outside of corporate limits of towns, between Jacksonville and Miami, you will pass more than 1000 of the large billboards and nearly 6000 smaller signs, and these figures do not include the multitude of signs on and about roadside stations and stands, nor the innumerable arrows on the trees. In all this distance you have averaged one sign every



THEN COMES THE ALMOST CONSTANT PROCESSION OF SIGNS LEADING TO MIAMI—23 TO THE MILE



three seconds. At the end of your journey what must be your impression of Florida?

A constant succession of signs and billboards of every size, description and color, flashing past your car with kaleidoscopic effect, and mingling with roadside shops, filling stations and trailer camps to compose the Florida scenery. One long continuous harangue of untimely and unwelcome advice as to hotels, whiskey, beer, shoe polish, patent medicine, what route to follow, what city to visit, what paint to use, what car to buy, what gas to burn, more hotels—always more hotels—and an unending list of Gardens, Springs, Alligator Farms, Turpentine Stills, and Reptile Exhibits seeking your patronage. The whole of Florida appears to be one vast circus of sideshows, each trying to outdo the rest in the number and noise of its barkers lined up along the highways. So it must seem to the newcomer with any taste at all.



ALONG THE HALIFAX RIVER ON U. S. 1, HERE AS LOVELY AS ANY PARKWAY



THIS ON THE SCENIC INDIAN RIVER ROAD!

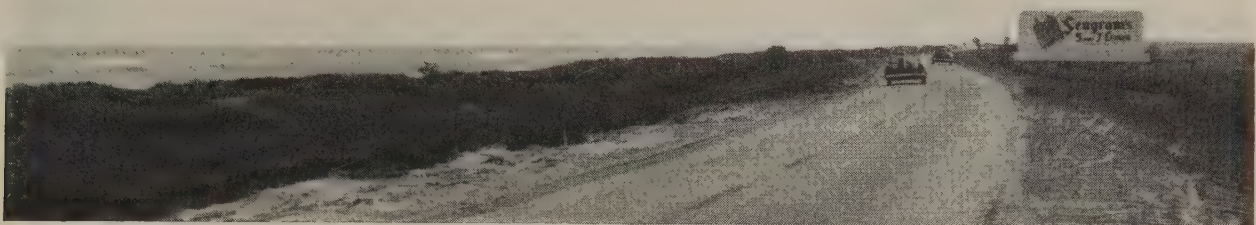
However, there are oases in this harrowing trip. The surprisingly lovely stretches along the Halifax River and the Indian River convince you that Florida unquestionably has beauty where man has not utterly destroyed it, and make you wonder all the more at Florida's lack of interest in this roadside control problem. For even along these river highways signs and billboards and unnecessary roadside business are crowding in, even between the road and the river view. For more than fifty miles south from Indian River City, where often the highway closely skirts the river, the advertising signs average twenty-one per mile.



ON FIFTY MILES OF U. S. 1 ALONG THE INDIAN RIVER, SIGNS AVERAGE 21 PER MILE



THREE AND ONE-HALF SCENIC MILES OF OCEAN HIGHWAY WHERE U. S. 1 LIES CLOSE TO THE OPEN SEA



MASSACHUSETTS FORBIDS BILLBOARDS ON SUCH A SCENIC ROAD. FLORIDA TAKES NO ACTION

Another striking oasis is the three-and-one-half-mile stretch where U. S. 1 skirts the Atlantic Ocean, where the traveler can watch the ships far out at sea and hear the breakers rolling in to the very road. It is the only place on the main Florida peninsula where this highway offers a view of the open ocean. Massachusetts would declare this a scenic road and would refuse to grant the permit which that state requires for every sign. Massachusetts has this power provided in its state law and upheld by its Supreme Court. In California certain counties have zoned hundreds of miles of just such scenic highways against the intrusion of billboards and unnecessary business. The Carmel-San Simeon Road, skirting the Pacific Ocean for eighty miles, is entirely pro-

tected by zoning. All business is restricted to a few small areas and no business can go between the highway and the sea.

But Florida makes no effort to protect her precious three and one-half miles. Signs have increased noticeably within the last three years. Two of the largest billboards have very recently intruded. Still worse, strings of cabins and shacks are springing up between the highway and the sea. Yet Florida, undisturbed, sleeps on.

The display on this prize portion of U. S. 1 is little worse than that along most of Florida's heavily traveled roads. On U. S. 17 between Sanford and Kissimmee, 31 miles outside of towns show 1094 signs, while 16 miles on U. S. 90, between Jacksonville and Baldwin, show 327.



CABINS CROWD IN BETWEEN ROAD AND SEA. PALM BEACH COUNTY COULD STOP THIS BY ZONING



THE SOUTH APPROACH TO ST. AUGUSTINE—90 SIGNS IN TWO MILES

CITY APPROACHES

Most cities of any size have a heavily-billboarded approach. Orlando, The City Beautiful, has 77 signs on one and one-half miles coming in from Mt. Dora. On a two-mile south approach St. Augustine has 90 signs; Jacksonville has 70. The three miles of new divided road leading into North Miami Beach are already lined with 38 boards to the mile, and the last mile into Miami Shores carries 44 signs and billboards.

Fort Myers, Lake Wales, Palm Beach, Lake Worth, Miami Beach, Boca Raton and Coral Gables have banished billboards within their limits. In Ft. Lauderdale city ordinances, passed by cooperation of the Chamber of Commerce and State Road Department, forbid all signs on the one-and-one-half-mile beautification project at the north entrance. Of 268 signs removed 112 were large boards 10 feet or more in height.

The city of Sanford might have an approach of unusual beauty on three miles of new highway along Lake Monroe, but no effort is made to plant this new approach, or even to keep it clean. Already 125 small signs, many for local firms, and 7 poster panels, create a shoddy fringe along the entire stretch. A civic campaign could clear the approach and county zoning could give permanent protection.

CONDITIONS RAPIDLY GROW WORSE

Signs and billboards from Jacksonville to Miami have doubled in the last six years. This fact is verified by a comparison of current records with roadside records made in 1934. At that time signs on this highway averaged 12 to the mile. Today the average is more than 23.

Today, from Indian River City to Miami, there are 566 billboards and 3700 smaller signs. Large boards have more than doubled; small signs have increased by one-third. On the picturesque road along the river from Vero Beach to Indian River City, the total number of signs has increased from 708 to 1290 and large boards have again more than doubled. From Ormond to Jacksonville there are 90 more large boards than in 1934; from Jacksonville to Baldwin 37 more; from DeLand to Daytona 17 more. From Ft. Myers to Sarasota on the Tamiami Trail the average has increased from 12 to 25 signs per mile.

The increase still continues. Two series of very large billboards have been recently erected throughout the state, one advertising beer, the other whiskey. In one

day's drive down U. S. 1 you are assaulted by 19 of these huge whiskey boards in brilliant red. Today still another series of the same super-size is going up to advertise another brand of whiskey. A lucky day indeed for the billboard industry when Florida repealed the law against liquor advertising! Another series of new boards is now appearing to advertise the Ocean Highway, U. S. 17. Twenty-three stand between Vero Beach and Ft. Lauderdale. Five have appeared on the Tamiami Trail.

Even on the new Over Seas Highway to Key West signs are multiplying. One can excuse the small signs advertising the newly-opened eating places along the keys, but what possible justification is there for two huge whiskey billboards, and another billboard standing between the highway and the Gulf, to advertise the *Miami Herald*?

Fortunately the most scenic stretch, between Lower Matecumbe and Big Pine Key, is protected by the National Park Service against all undesirable development. Here the tourist may enjoy the scenery without unnecessary commercial intrusion. The entire highway could be protected by Monroe County if properly zoned.

HOW CAN FLORIDA STOP THIS ABUSE OF ROADSIDES?

Little can be accomplished until the state groups most concerned unite to form a central committee whose job it will be to study conditions, determine the best law for Florida, and organize and educate the state. Education is paramount. The citizens of Florida will not support any bill until they realize present conditions in their own state and know what solutions have proved possible in other states. Fifteen states now have such a state committee, but in Florida some well-meaning chairman in some women's federation, utterly ignorant of the scope of the problem, prepares a billboard bill. Some legislator presents another. No one organizes the state to back either bill and failure is inevitable.

Foremost among the groups that must support roadside control, if it is to be achieved, are those whose profits depend upon an increase of travel. Contradictory as it seems, these very groups are today responsible for much of the abuse of Florida roadsides. Hotels, resorts, highway associations and chambers of commerce are using innumerable signs and billboards, regardless of their devastating effect on the beauty of Florida's highways. Yet it is a matter of common knowledge that attractive highways are today a potent factor in increasing travel.



HOTELS ARE CHIEF OFFENDERS

On many miles of Florida highways from one-third to one-half of the painted billboards are used by hotels. North of Jacksonville, on U. S. 17, 47 out of 108 painted billboards advertise Jacksonville hotels. Hotels use 26 of the 37 on the first twenty-two miles of U. S. 1 below the Georgia line; 34 of the 78 between Baldwin and Jacksonville; all of the 19 between Baldwin and Lake City; 74 of the 261 from Vero Beach to Miami Shores; and 7 of the 11 already erected on the new highway to Key West. Cities and resorts are a close second. Orlando, in 1940, uses 300 posterboards to advertise The City Beautiful.

Admittedly, hotels and resorts need to reach the traveler en route, but is the billboard the effective method? A regional directory giving detailed information and distributed at filling stations on the route would meet the needs of the traveler far better—and more cheaply.

Whatever benefits the state of Florida as a whole will benefit each city, resort and hotel. Common business sense calls for a cooperative program that will *pull for the state of Florida*, instead of advertising individual attractions by a method that destroys one of the greatest attractions the state possesses.

Highways outstanding because of native Florida beauty; highways unique because of freedom from commercial ugliness, would be the most compelling advertising Florida could possibly have.

THE BILLBOARD INDUSTRY DOMINATES

In few states is the billboard industry as firmly entrenched as in Florida. An ardent advocate of the Trojan Horse method and boring-from-within tactics, the industry has its workers in practically every civic group of prominence. Most service clubs and chambers of commerce are afraid to discuss the subject of roadside control, because billboard members object. The industry is safer where ignorance and apathy prevail. The same influence extends also into the garden clubs and women's clubs, where, in some cases, the wives of billboard men, or of large billboard users, hold key positions and influ-

ence club policies. The industry has many friends in court.

Thus does the billboard industry close the door to free speech and to the most potent factor in awakening Florida to action—a knowledge of what other states have done to secure roadside control, and what Florida can do if it so wills.

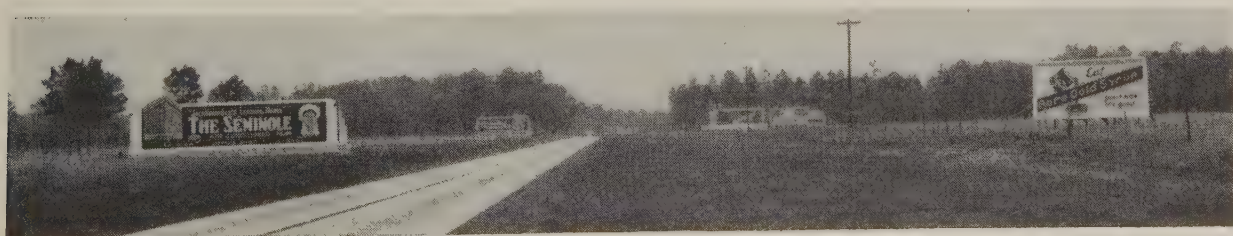
The State Junior Chamber of Commerce and the State Architects Association have passed strong resolutions in favor of restriction of highway advertising. The greatest service that these groups can possibly offer for roadside control in Florida is to open their programs to a full discussion of the problem.

THE BEST ROADSIDE BILL FOR FLORIDA

A Highway Protective Area bill, such as was introduced in Florida last year, while a desirable type of legislation, could not possibly be passed in any state where there has been so little education and organization for roadside control. Such a bill, if introduced again, should be accompanied by a second entirely separate bill for simple license and permit regulations, which would have some chance to be enacted. The two bills are not conflicting, for if a protective area law is enacted, license and permit regulations will still be needed.

If Florida required a license for each billboard company, with annual license fee; a permit for each sign, no matter how small, with annual permit fee of \$4 (as in Massachusetts); the affidavit of the property owner's consent before such permit is granted; and the display of a tag on each sign showing the permit number and date, these simple regulations would do away with at least one-half of the smaller signs now along Florida's highways.

But, it should be clearly understood that these regulations would not check the large billboards of the organized billboard industry. In fact, they would strengthen the position of that industry by clearing away the mess of small competitors, and by quieting the anti-billboard agitation. For this reason, a license or permit law should not be enacted unless it is passed frankly as a first step, with the state well organized to push ahead for further regulations.



EVEN THE 200-FOOT RIGHT OF WAY FLORIDA IS ACQUIRING WILL NOT ELIMINATE THE SIGNS

THE NEXT STEP

With a license and permit law reducing the mass of small signs, regulation of the large billboards may be sought through setbacks, as in Massachusetts, where no sign may stand within 50 feet of the right-of-way, and large boards must go back from 100 to 300 feet; or as in Vermont, where billboards must move back one linear foot for each square foot in the sign.

Probably the best step to follow the license and permit law in Florida would be county zoning. For this Florida needs to pass an enabling act authorizing all counties to zone. County zoning has demonstrated its power to control all forms of roadside business in several California counties, where, on rural roads, billboards are forbidden and business is confined to a few small areas open only to business needed by the traveler. Thus rural roads are kept rural, and billboards are confined to true business districts. There is also a degree of architectural control, with no permit granted for a business building in a rural business area until plans for the structure are accepted by the County Planning Commission. Signs on the place of business are limited—in some counties—to three in number; none more than 24 square feet in area. Such regulations do not apply within corporate limits.

COUNTY ZONING IN THE SOUTH

County zoning already spreads into the South. In Georgia, Fulton County and Glynn County are zoning. Seven miles on U. S. 17, just south of Brunswick, are clean and attractive because of Glynn County zoning, which forbids signs in scenic areas and recognizes the marsh areas as scenic. Mississippi has authorized the Gulf counties to protect the Gulf Highway by zoning. Arlington County, Virginia, enforces a zoning ordinance

that allows billboards only in general business and industrial districts. *These regulations are retroactive* and the billboard companies, evidently loath to attack this provision in the courts, have moved their non-conforming boards.

It is unfortunate that Florida's first experiment in county zoning, the Dade County ordinance, should fall short of the roadside control features already proved possible in California, Georgia and Virginia. Dade County provides desirable setbacks for both business and signs to protect safety and land values, but it is disappointing to find that the agricultural zone is left wide open for general business and billboards. Along rural highways, where protection is most needed, there is practically none. (A noticeable clean-up of snipes and illegal signs has been effected along the county's rural roads by the Park Commission.)

WHAT COUNTY ZONING COULD DO

With zoning that protects the rural regions from indiscriminate business and signs, Dade County could assure attractive approaches to the Over Seas Highway and Tamiami Trail; Brevard and Indian River Counties could make their stretch of U. S. 1 a parkway; Palm Beach County could guard her Ocean Shore road. Pinellas County could protect her many miles of beach drives. The new divided highways that the state is building near the large cities could be protected. Each state-line entrance could be a dignified introduction to the state.

Are these goals worth the effort? Florida is classed by many travelers today as one of the worst billboarded states in the country. What will be its reputation within another decade if nothing is done to check this parasitic industry?

With many miles of highway as lovely as any parkway, once they are cleared of advertising and cheap commerce, the challenge is clear:



WAKE UP, FLORIDA, AND COME OUT FROM BEHIND THOSE BILLBOARDS



Nature's big "frosted cake"—the terrace of Mammoth Hot Springs, Yellowstone National Park. Each inch of the vari-colored crystalline deposit of the Hot Springs is estimated to represent a cycle of thirty years. Hiker and rider find the trails around great Mount Rainier a particular lure, taking them away from sight and thought of centers of concentration. Photographs courtesy of the Northern Pacific Railway.





Newcomer to the National Park ranks is the Olympic National Park on the Olympic Peninsula of Washington. Above we see the sunset on the Pacific from La Push, Washington, on the Peninsula. Below, campers stop for a lunch in the new park. This is a spot in Elwha Basin, and in the background is rugged Mount Seattle. Photographs courtesy of the Milwaukee Road and the Northern Pacific Railway.





If our trip takes us to Alaska we will probably visit Sitka, once capital of Russian America, which lies in an enchanted setting dramatized by snow-capped Mount Edgecumbe. One of the splendors of Jasper National Park, Alberta, Canada, is glorious Maligne Lake embraced by snowy peaks. Photograph courtesy of the Canadian National Railways.

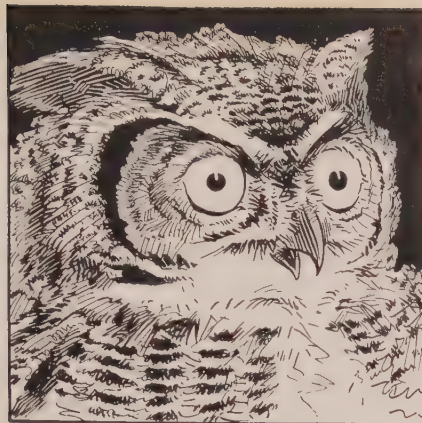




The region of Banff National Park includes beautiful Lake Louise and many other spots accessible by trail where the visitor may find solitude in the wild. Here, above, is a view of Mount Ishbel. Photograph from the Canadian Pacific. The traveller may turn south from Banff to Waterton Lakes Park, which adjoins Glacier National Park across the international boundary. Glacier is a true wilderness park, most of its great area to be reached only by trail to the chalets and tent camps. To visit these parts of the Park is worth every effort. Below we see an Indian horseback party near Iceberg Lake. The Blackfoot Indians have a reservation close to the Park boundary. Photograph courtesy of the Great Northern Railway.



As We



See It

FLORIDA'S ROADSIDES

In the center of this issue of *NATURE MAGAZINE* will be found a special feature entitled "Florida Behind the Billboards".

It is a factual statement based upon information carefully gathered during the winter of 1939-40 by Mr. and Mrs. W. L. Lawton of the National Roadside Council. Its publication reflects the conviction of the American Nature Association that conservation and restoration of the beauty of the rural roadsides of the United States is essential, not only in the interests of safe and enjoyable travel upon our highways, but as a matter of vital economic importance to all states, particularly those where scenery is a tremendous asset.

There may be those who will take offense at this frank criticism of what Floridians have permitted to happen to their roadsides. Out of an inverted sense of state pride some, ostrich-like, may feel that unfortunate conditions that exist should be ignored. They may feel that Florida is being unfairly singled out for attack. Far from it, for we have published similar accurate and factual reports of studies in California, Washington, Oregon, Michigan, Indiana, Illinois, Pennsylvania, Georgia, North Carolina, South Carolina, New Jersey, New York, New England and the approaches to the District of Columbia in Maryland and Virginia. All of these reports have had one

object—to point out to the far-sighted citizens of these states the extent to which they have been victimized; the manner in which a parasitic industry has capitalized upon the people's tremendous investment in highways.

In many of the states where these studies have been made and published, they have provided the foundation for action to improve the situation. This is particularly true of California, Oregon, North Carolina, Vermont, Maine, Connecticut and Massachusetts. In these states, and others, highway officials have found their hands strengthened by an aroused and organized public sentiment, and substantial starts have been made toward correction.

In Florida the tourist business is its leading industry. Yet this great winter playground is more under the thumb of the billboard industry—less aware of what is happening to its greatest asset—than any other state. Mrs. Lawton concludes her report with constructive suggestions. We hope, therefore, that intelligent, civic-minded Floridians will be so aroused by this frank and incontrovertible presentation of facts that they will organize to throw off the yoke that has insidiously been fastened upon them. Florida has too much at stake to continue to be the victim of an ugly, greedy commercialism that has no concern for the public interest. If we can help further in restoring Florida's rural beauty we are at the service of every far-seeing citizen of that state.

KINGS CANYON NATIONAL PARK

Kings Canyon National Park in California has been added to the National Park system under a bill passed by Congress and signed by the President. Under the measure General Grant National Park loses its identity as a separate park and becomes the "General Grant Grove Section" of the new park. We opposed the passage of this measure because we felt—and still feel—it a mistake to exclude Tehipite Valley and South Fork Canyon from the area set aside. These sections of the region are of outstanding value scenically, and were included in John Muir's original conception of the park. Withholding them for future power and irrigation development constitutes a potential threat to the rest

of the park, and represents a compromise for which we still have no sympathy. The "half a loaf is better than none" policy often does not lure us.

This area is now a park, however, and is an area that we hope to see administered in accord with the highest standards. Harold L. Ickes, Secretary of the Interior, has stated that the purpose of his department with respect to Kings Canyon "is to treat it as a primitive wilderness, limiting roads to the absolute minimum, maintaining foot and horse trails, excluding elaborate hotels, admitting all responsible packers, promoting good fishing, endeavoring to restore such nearly vanished wildlife as the Sierra big-horn, the southern wolverine and the Pacific fisher."

With such a program we are in the heartiest accord, and we shall, of course, sustain Mr. Ickes in such a policy.

EXIT ANOTHER WILDERNESS ★

Rising in the Sawtooth Mountains, the Salmon River follows a turbulent course through mountainous central Idaho. It passes through great gorges and between forests of virgin timber. It is known to the Indian as "The River of No Return" for its wild, white waters have claimed the lives of many Indians and many white men. It defied Lewis and Clark and turned them back to seek another passage. It was not until the start of this century that a successful trip was made on this river from Salmon City to the point where the Salmon empties into the Snake River.

The course of this river runs along the edge of Idaho Primitive Area, a wilderness heavily stocked with wildlife. It is not accessible except to the hiker, camper or

sportsman who is prepared to meet the outdoors on its own terms, but a crew of CCC boys is now at work cutting a road along the banks of the Salmon to open it to tourist travel. Thus the erstwhile integrity and complete isolation of one of the few remaining wilderness areas will soon pass, and the region will be made of easy access to the type of sportsman who seeks game by the easiest method, and who, usually, has the lowest standards of sportsmanship.

In the case of this Salmon River road a study was made by the United States Forest Service to determine the need for the highway. Economic considerations in this section of Idaho appear to have justified its construction, and it is not therefore subject to the criticism that may properly be levelled at many such road projects. The road will, of course, make the wilderness more accessible, and it does rob the river of its mystery—a dual sacrifice.

Things to Think About

Successful opposition to legislation placing a bounty on buzzards, and successful support of a measure extending protection to the brown pelican, were two of the accomplishments of the Texas Nature Federation during 1939. A program of public education was launched through radio broadcasts and newspaper and magazine articles, and will be carried on during 1940. One objective for the new year is to have the roadrunner, rapidly being reduced in numbers, placed on the protected list.

Conservation Unit I, bearing the title *Shortage of Waterfowl*, is issued by the Emergency Conservation Committee. The author is Ellsworth D. Lumley. There is a short introduction by Edward A. Preble. It is the third edition of this Unit, and has been completely revised in accordance with the current degree of shortage in this group.

In the twenty-five pages of this brochure are considered the various activities that have helped or hindered waterfowl along their way. Legislation on seasons, hunting restrictions, and refuges are reviewed, and there are discussions on predators and diseases, and especially the outstanding cause of depletion—shooting—with its accompaniments, crippling, baiting, decoys, and lack of sportsmanship.

Topics for study involving personal acquaintance with the birds, the crow in relation to waterfowl, lead poisoning, and the Migratory Bird Treaties with Canada and Mexico, are recommended for advanced students, Nature Clubs, Scout groups, and teachers. There are charts, cartoons and other illustrations, and two pages of helpful references.

Copies are available from the Emergency Conservation Committee, 734 Lexington Ave., New York City.

Disturbed by the ugly scars made by blasting for new roads up the mountains in the vicinity of Victoria, British Columbia, H. G. Bayliss of 3008 Douglas Street, Victoria, is anxious to form a conservation society to do a bit of public education in this attractive British Columbia city. Victoria readers please note.

In a report to Secretary of the Interior Ickes, the Biological Survey states that the annual "take" of furs in the United States is markedly in excess of the number of fur animals annually produced. More careful inventories on the part of the States are urged and more stringent regulation of trapping is declared essential to check the continuing depletion of this great resource.

By virtue of a grant of \$1000 from the Rosenberg Foundation of San Francisco, work is now under way on a "Conservation Manual" of source material for high schools and junior colleges. The work is being done by two members of the California Conservation Council, Dr. Aubrey A. Douglass of the State Department of Education, and Professor Woodbridge Metcalf, forester at the University of California. California has dire need of some truly constructive conservation philosophy.

Three years in a row the Wisconsin Conservation Department has "planted" more than a billion fish in the lakes and streams of the state. The figure for 1939 shows 1,133,472,848 fish. This is a lot of fish and we cannot help wondering how they were counted right down to the last eight fishes. However, Wisconsin's hatchery facilities have been increased greatly, its stream and lake improve-

ment program enlarged, and its army of fishermen has mounted steadily. Fishing has become big business, it appears.

• • •

Announcement is made of the selection of the subject for the 1940 "duck stamp", which will be reproduced from a drawing by Francis L. Jaques of a pair of black ducks flying down-wind over a marsh area. The stamp will go on sale July 1, and will be available at all first- and second-class post offices. It must be affixed to the 1940 duck hunting licenses. Since 1934, 3,472,582 stamps have been sold at one dollar each, ninety per cent of the revenue being devoted by law to the establishment of inviolate sanctuaries for migratory waterfowl. It is estimated that some 20,000 of the stamps are sold annually to philatelists.

• • •

A few more than five thousand bison in the United States and Canada are the remnant of the sixty millions estimated to have roamed the ranges a century ago, according to a census by the United States Biological Survey. Two hundred of these, the progeny of a small transplanted herd, are found in Alaska. The location and ownership of all the animals recorded are shown in a mimeographed leaflet, number BS-148, entitled *Status of the American Bison in the United States and Alaska, 1939*. Copies are available from the Biological Survey on request.

• • •

Most people can name many of the products of the forests of America, but there are many other uses that

never occur to most of us. This makes the bulletin entitled *Products of American Forests* particularly interesting to anyone concerned with the economic importance of this resource. Written by J. Alfred Hall and T. J. Mosley of the Forest Service's Forest Products Laboratory, this popularly presented bulletin should be immensely valuable in schools. Copies are available from the Superintendent of Documents, Washington, D. C., for 20 cents.

• • •

Another valuable forestry bulletin just issued is entitled *Community Forests*, by Nelson C. Brown. This publication summarizes the movements for local forests both here and abroad, and outlines the methods of creating such areas and the reasons for so doing. This bulletin, and that reviewed above, reflect the improved physical character of government publications in the matter of layout and printing. *Community Forests* is available from the Superintendent of Documents, Washington, D.C., for ten cents in cash.

• • •

A general picture of the vital part that forests and forestry play in our national economy is presented in an excellent pamphlet, entitled *Forestry and Permanent Prosperity*, issued by the United States Forest Service. It is the work of R. F. Hammatt and is Miscellaneous Publication No. 247, of the U. S. Department of Agriculture. It is available from the Superintendent of Documents, Washington, D. C., for five cents in coin.

Another Strange Wren Home

By BURDETTE E. WEYMOUTH

WHEN some juniors at Camp Pinnacle, Lyme, New Hampshire, set up a cow skull to serve as a guidepost to their chapel, they also provided a pair of house wrens a nest sanctuary in the skull's brain cavity. It was a vertical cave, with entry at the top through the spinal foramen. Indeed, it was just the thing for the bird whose scientific name, *Troglodytes aedon*, means cave-dwelling nightingale.

Two broods were reared in the skull last season in a nest of sticks and grass. Father was an energetic singer and a good provider. He generally approached the nest by hops from ash tree, to post, to skull. Both parents soon accepted the photographer, who was not more than forty inches away. A wren house within seventy yards sheltered two broods also.

No doubt the wren's fondness for queer homes is more seeming than real. With most good box and tree apartments already taken by the early birds, the late-April wrens have to take what's left, and like it.

A friend, spring-cleaning the camp grounds, once remarked that he missed the wrens of his boyhood home. Meanwhile a wren had been singing so regularly from the ash tree that Lloyd's would have granted long odds on a repeat. I suggested listening for the once-familiar song. It came, quickly: to him, an invitation to hustle over and renew acquaintance; to me, a little explosion set to music.





VIEW OF AN ENTIRE STREAM GARDEN WITH A CORNER OF THE POOL

Note that the entire area slopes to the stream and down to the pool. The surface of the pool is about four feet lower than the water source and five feet below the margin of the area

STREAM GARDENING

How the ingenious gardener may add garden beauty

By ROMAINE B. WARE

WATER in the garden as decoration is as old as gardens themselves. Even before written history, when pictures were the only records, we find gardens portrayed with streams, pools and fountains. In tropical lands, where gardening seems first to have begun, water played an important role both practically and decoratively. When rainfall was lacking or irregular, a stream or pool helped temper the parched atmosphere, and was available for irrigation.

In more recent times water has continued to play a stellar rôle in the garden drama. The famous royal gardens at Versailles, France, probably the most extensive ever built by man, covering in their heyday many hundreds of acres, contained, besides a vast number of pools and cascades, more than fourteen hundred fountains or jets of water. These gardens, even within their much shrunken confines of today, exhibit more than six hundred fountains. Their famous designer, Le Notre, was compelled to convey water many miles for his masterpieces, and Louis XIV spent a fortune on these gardens.

Today fountains hold little favor. Only in the most formal surroundings do they seem at all desirable. They

may be decorative, but private grounds are seldom suitable for them, and they are out of place in average home grounds.

Pools and streams, however, have a real place in good gardens. Few are too small for a pool, and ingenious gardeners have added charm and distinction to their landscapes by constructing streams and waterfalls. Not every garden can properly contain a stream, but by clever planning it is surprising how delightfully they may be worked into many.

Good gardening today is almost invariably naturalistic. Informal borders, irregular in outline and contour, have superseded the trim formality of clipped and sheared effects. Informal pools and streams have taken the place of formal pools and fountains. The day of the round cast-iron pool with statues spouting jets of water is gone. There are still situations where formal lines must be kept because of location and surroundings, but they become rarer year by year.

Stream gardening may not be the easiest garden activity, but, by observing proper considerations, a stream garden may easily become the most charming feature of your gar-



WHERE THE WATER FLOWS FROM THE "SPRING"

A close-up of the ledge-like formation over which the water first starts on its way. This stream discharges about five gallons of water a minute, but half as much would be just as effective

den. It must, almost of necessity, be naturalistic. Confined within formal lines, unless the setting is architecturally perfect, it may prove a monstrosity.

Building a naturalistic stream requires knowledge of the way Nature uses her materials and the ability and imagination to imitate her. Nature seldom builds ponds on hilltops, or constructs streams with built-up walls of soil like the dykes of Holland. Irrigation ditches on hill-sides may serve their purpose, but streams of this sort in a garden will lack natural charm.

The first qualification for a successful stream garden is suitability. Surroundings and location must be carefully judged, and Nature must be studied. If you dream of a stream garden and your location is practically level, study streams in Nature as they meander through meadowlands. If your situation is rough and hill-like, a mountain stream may well be your model. Do not try to build a rushing mountain torrent in a level area where an artificial hill will not seem natural.

Under most conditions, concrete must be used in building stream gardens, but this does not mean that any concrete should be visible when the job is complete. A successful stream, if really naturalistic, will show not the least trace of this plebeian substance. Rocks, soil, sand, or gravel, as well as turf or plants, must hide every vestige of concrete or your stream will not be a complete success. This is not difficult, although it demands minute attention to details in carrying stream garden plans into effect.

If you pattern your stream after Nature it will have a varied and irregular margin. At some points the banks will be high; at others, low. There will be wide shallow places and deep, fast-flowing sections. Rocks will predominate in some parts, while sod or gravel will form the water line in others.

A study of the illustrations herewith will show the effects possible. These photographs were taken in the garden of Carlton W. Smith of Dayton, Ohio, which was designed and constructed by the writer. The site is a plot of about a half an acre, originally with a slope of about three feet in a hundred. By excavation and grading the drop was increased to about four feet in fifty, and a naturalistic pool, forty feet across, was made in the lowest part. From a point fifty feet away and still below the level of the margin of the plot, a stream, seemingly originating from a spring among a ledge of rocks, meanders down into the pool, with six little falls varying in height from a few inches to a foot and a half.

At no point in this entire stream can one see a particle of concrete. More than thirty tons of old weathered limestone, hauled from an old stream bed thirty miles away, was used to form ledge-like outcroppings through which the stream apparently has cut its way. These photographs were taken only two years after the building and planting. In a few more years it will be even more natural in appearance. However, last spring, a visitor, while strolling through the garden with its owner, Mr. Smith,



THREE OF THE TINY CASCADES IN THE GARDEN

This naturalistic water course was designed and constructed by the author for Carlton W. Smith of Dayton, Ohio. These pictures were taken two years after it was completed

remarked, "I did not know there were any natural springs on this property."

The water flowing through this stream is pumped from the pool by a small electric pump buried nearby. Once or twice a season it must be oiled, but otherwise no care is required. The cost of operation is negligible compared to the satisfaction the effect affords. No sound is heard except the tingle and splash of the falls.

Construction of such a stream is comparatively simple. It is really only a series of narrow, irregular pools overlapping each other with three sides slightly higher than the fourth, where the water runs into the next lower one, forming tiny cascades. Small pools like these are easy to build, but always keep in mind that they must be so shaped that every part of the concrete forming the water-holding basin may be masked from sight. These basins can be shaped like a dish with the margins somewhat like the rim of a dinner plate. Turf, rocks, sand, gravel, or a margin planting can extend out over this rim to make the water line.

Perhaps we cannot over-stress the factor of concealing concrete. This substance spoils more otherwise good pools than any other single mistake, despite the ease with which the error may be avoided.

Construction of the lip of the waterfall requires careful attention. This is the edge over which the water cascades. It should overhang a little so the cascade will show off to better advantage. This will create a tiny

grotto, or shadow effect, behind the falls and make a little water look like a much larger amount. Use great care in fitting the rocks forming the lip so they permit no seepage around or through them or your falls will be less in volume than desired. If you find any leaks, they may be stopped with a product called ironite, a sort of iron cement that hardens quickly under water, and looks like rock. Ironite may be bought from building supply dealers, and, while a bit costly, it is very strong, and a little goes a long way.

The bottom surface of your stream may be masked with gravel or stone chips, although it soon loses all semblance of concrete as the accumulated moss, plant material and other debris cover it. No small measure of the success you attain in building a water garden depends upon ability to copy Nature. This will be easy to do if you observe her handiwork carefully.

As to the volume of water, most garden makers seem to feel their waterfalls must be like mountain torrents with a flow of many gallons per minute. Others realize that some of the most charming effects are gained with only a tiny flow of water. One of the most delightful and naturalistic water effects I ever saw was in an Oregon garden where a tiny trickle no larger than a lead pencil fell from a ledge backed with dense shrubs and masked with moss and ferns. The rock from which it fell formed a sort of grotto, the water showing beautifully against the shadow. It is not volume (Continued on page 304)

THE OPPORTUNIST

*A dog who faced life
and found the answers*

By DIANA THORNE

*With Illustrations
by the Author*



LIKE all creatures that live by their wits, The Opportunist was shrewd and worldly wise. Shaggy of coat, unkempt of appearance, with long, uneven legs and debatable color, but with a pair of eyes and ears and a tail that did their work admirably, The Opportunist lived by his wits and the kindness of both the resident and the transient in our district.

What may have been his name we never knew. Nor was it certain exactly where he lived or whence he came, but everyone acknowledged that he was a feature of the neighborhood and generally treated him accordingly.

Whereas other dogs, owned and petted, washed and groomed, doctored and fed, suffered the indignities of the leash, were scolded and fondled with equal unreasonableness, or, perhaps, were kicked and neglected, The Opportunist suffered neither from neglect nor from over-fervent supervision. He was his own master and only he knew exactly what he suffered. His perpetual good humor and a constant chewing of something or other suggested that he suffered not at all.

We often saw him trotting up and down the street, purposeful, as though he had a real destination in view. Always he had a roguish eye open for possibilities, and an ear cocked for danger signals.

He was a lumbering creature of unusual and remote parental mixtures. But if his origin was uncertain his mode of life and his intentions were not.

He looked you over in the street and from a safe distance, but he seemed able to determine by his nose not only the sort of person you were but the very mood you were in. Then, if the scent and the dictates of his senses augured well, he let you know gently but firmly what was required of you. In the end, you found yourself in a shop investing in a bone, or a bit of meat, or a few dog

biscuits. As your reward, he followed you down the street a few paces, wagging his preposterous tail, finally stopping for a moment or two to gaze after you with a grin. At the end of these formalities, and his loot devoured, he was off on other business of his own.

We often overheard housewives or servants discussing him. The cook next door seemed to have been one of his special conquests and was unceasingly talking of him—or to him. On a certain morning I overheard her:

"There goes the pore creature again. Don't he look starved! Whoever it is that owns him sure treats him mean. I can tell by the look in his eye. It's *that* sad! Come here, you pore creature, and be fed proper-like!"

That "look in his eyes" was a bit of stock-in-trade with The Opportunist. He carefully preserved it for women with soft hearts and impulsive natures. He was the panhandler supreme. He

told a story with those eyes that was more complete than that of any "dime for a cup of coffee" mendicant.

I never knew him to refuse anything that was offered him, and often saw him walking along carrying a bone or a biscuit in his mouth, an anxious expression replacing the pathetic one. He was wondering, no doubt, where to bury his treasure safely, where he could reclaim it when appetite indicated the need for it.

Like those of all tramps, The Opportunist's meals were irregular and varied, but, we more than suspected, quite ample. If he managed to attract the attention of a street laborer taking his mid-day meal in an alley-way, he was apt to go shares on a ham sandwich and a sip of beer. If, on the other hand, he happened to be invited into the kitchen of some more affluent person, he drank milk and ate dainty cakes with equal gusto.

It was he, we felt sure, who invented a graft not



THE OPPORTUNIST GIVES VOICE



OFF TO HIDE A BONE SOMEWHERE

known to dogs of lesser brain and personality. He followed people into food shops and there shamed them into buying him provender. The delicatessen man on the corner once confided to us that he brought cash customers who bought roast beef and demanded paper cups for water for the dog. He kept a supply of them especially for The Opportunist.

"Sometimes," confessed the delicatessen man with a chuckle, "he gets two or three people a day! When he doesn't get any, he won't come in and beg. Not he. He knows we can't encourage that kind of thing. The best I can do is throw out some scraps from the back door to him. He'll take these if there's nothing better, but he's always hopeful. An optimist—that's him!"

None of us were able to find out much about the history of this remarkable dog-character. We assumed, of course, that he was the careless progeny of a careless mother. But it was abundantly clear to us that he did not intend to suffer unduly because of this—nor did he.

Some people said that they had known him as a puppy living with a slum family, where he was maltreated by the children and starved by the elders. If this were true, then he must have soon remedied that state of affairs by running



THAT MISTREATED LOOK



A MEAL IS OVER



HIS ANCESTRY WAS DOUBTFUL

away. Into the wide world he went, and he knew by instinct and experience that it was a world only kind to those who knew how properly to meet its problems and crises. He knew, too, by instinct, it seemed, that he must avoid dog-catchers at all costs. He showed remarkable skill in evading this enemy. His survival, in fact, won the admiration of the owner of a lunch counter a few blocks away, and this Irishman, in a spirit of generosity, invested in a collar and dog license for The Opportunist.

"Does you good to see him getting away with it," he stated as a defence for his soft-heartedness. "A proper example he is for us humans!"

We blush to think of our own share in the encouragement of the fellow. Many a time he inveigled us into the butcher's or the delicatessen. Once we even went so far in our folly as to attempt to scrub him down and groom him, a procedure for which he reproached us by a long absence from our doorstep.

But after the Irishman took an interest in him, all that was changed. He behaved as if he had never even heard of fleas! Three cheers for The Opportunist who has now acquired a name for himself. You guessed it—it's Mike!

Our Precious Heritage

By RILEY SCOTT

The trees are man's most steadfast friends:
They bless his life and, when life ends,
A silent vigil still they keep
Above the portals of his sleep.

Trees break the fall of rain and snow
And regulate the water's flow;
They beautify the earth's scarr'd face
And furnish timber for the race.

In ev'ry science, ev'ry art,
The tree has played a vital part;
In peace and war, on land and sea,
Man's constant help has been the tree.

Were there no trees, this world would soon
As barren be as yon dead moon:
A dreary waste of desert land,
Of mountains bleak and wind-swept sand.

Then let us guard our heritage
Of precious trees from age to age!
The greatest boon to mankind given,
They bless the earth and point to Heaven!

WILDLIFE CONFERENCE

By RICHARD W. WESTWOOD

BRINGING TOGETHER some eight hundred men and women interested in wildlife conservation, and active in this field, the Fifth North American Wildlife Conference was held in Washington, D.C., from March 18 to 20. Called jointly by the American Wildlife Institute and the National Wildlife Federation, the meeting was held during Wildlife Week and in observance of it.

"We are well entered upon a new era of real conservation," declared Harold L. Ickes, Secretary of the Interior, in his address of welcome to those attending. He pictured a marked growth both in the knowledge of the extent of our remaining wildlife assets, and our appreciation of their importance to the country, since the first conference was called in 1936.

"So far as wildlife is concerned," Mr. Ickes declared, "the previous policy of the Federal Government had consisted in recognizing an emergency some months or years after it had occurred, when the damage had already been done. Then—as was the case with the passenger pigeon, the heath hen, and several other unique and valuable species of American wildlife—it was often too late to do anything except to sing the requiem. The present program marks an end to that type of 'husbandry', and in its place sets up one that projects its concern into the future and that attempts to solve conservation problems before they materialize in the form of immediate and unavoidable disaster."

Mr. Ickes pointed to the increase in migratory birds but warned that this does not mean that there is not still a shortage of ducks and geese. In fact, he declared, "a shortage still exists that will continue until all of the areas on the continent suitable as habitats of waterfowl are carrying capacity populations." Relaxation of hunting restrictions cannot be made until this goal is reached and "we shall never achieve it if selfish individuals and organizations insist upon breaking open the china pig whenever we have managed to induce a few dimes and nickels into it."

Pointing to Europe in arms, the Secretary asserted that Americans should have a feeling of humility "that our own resources are still so abundant that we are not driven to the desperate expedient of war in order to obtain those things that are necessary to maintain our populations at a standard of living that would be more decent than it is if only we had become conservation-minded earlier and were more conservation-minded even now. . . . We can never assure for America a future of peace and plenty until we renounce the rôle of squandering inheritors and become economizers and builders. In our handling of our natural resources for more than four centuries we were reckless spenders. Only during recent years we have learned to become earners. We have also learned that this is a nobler way of life."

In his address taking account of stock of the present situation, Dr. Ira N. Gabrielson, Chief of the Bureau of Biological Survey, took hope from the growth of general acceptance of two or three attitudes toward wildlife. One, he said, "is related to the growing understanding of the inter-relationship of all conservation programs." The other two are twin concepts: "First, we can have wildlife only by providing it a suitable place in which to live, and—second—we must keep our annual wild life harvests below the annual production."

Dr. Gabrielson declared that "the first great need for the future wildlife program is more information, more dependable facts and less guess work . . . research must be continued and on an increasing and expanding scale." To attain the goal of adequate and suitable places in which wildlife may live, he emphasized the importance of acquiring such areas, geographically strategic with relation to wildlife distribution. Finally, he urged, education must be extended into many fields. He declared that "we have not yet developed an effective mechanism for getting conservation understanding and information into the minds of those who do not yet know and appreciate its basic significance to future human welfare."

All the worthy principles expressed at this Conference have been heard before, coming from other mouths and couched in different words. We like to think, however, that there was more sincerity behind these expressed ideas than in former years. Yet in any estimate of the contribution of the Conference it should be recognized that game restoration, rather than wildlife as a whole, for purposes of hunting rather than for general enjoyment, were predominant considerations. Future conferences would have wider appeal and greater usefulness if all forms of wildlife enjoyment received their deserved degree of attention.

Reports were made to the opening session of the Conference on conditions in Canada by Hoyes Lloyd, Superintendent of Wildlife Protection of the National Parks of Canada; on wildlife legislation, by Carl D. Shoemaker of the National Wildlife Federation; on the progress of the work under the Pittman-Robertson Act, by Albert M. Day of the Biological Survey. Representative Karl E. Mundt of South Dakota presented a stirring picture of the pollution situation and the status of the current legislative battle for real pollution control.

Other general sessions of the Conference were devoted to the wildlife program of the CCC; farmer-sportsman relationships; the parts of commercial and sport fishermen in the conservation picture, and how wildlife might better be "sold" to the people. Technical sessions were arranged by a committee of the Wildlife Society, professional society of the wildlife (Continued on page 309)



SQUIRRELS ARE FREQUENT VICTIMS OF THE TRAFFIC

They are not able to gauge the swift approach of a silent motor car, and pay for it



MANY DRIVERS TRY TO RUN OVER SNAKES IN THE ROAD

Yet they are not only usually harmless, but valuable. At the left is a full-grown pheasant victim

Wildlife at the Crossroads

By WILSON B. FISKE

TWO HUNDRED years ago America was almost all wilderness. Today the whole country is so creased with traffic arteries, large and small, that the land is blocked off like a crossword puzzle. Yet in each segment of mountain, hill or prairie are wild creatures that know no boundaries and read no signs. They must cross the threads of a man-made network time and again to the tune of a motor symphony that all too often plays tragedy. For here on the highway stalks one of their worst enemies—the speeding automobile.

Day after day, wandering wildlife runs a varying gauntlet of dangers, ranging from the comparatively safe dirt road to the confusing, dangerous swirl of the main route. With some 20,000,000 cars plying approximately 3,000,000 miles of road in the United States, including a million miles of surfaced highway, the aggregate menace to birds, mammals and reptiles can well be realized.

The wildlife of every state suffers from this hazard. The extent of the toll is dependent upon the number of miles of surfaced roads, the intensity of motor traffic, the type and prevalence of wildlife, and the nature of surrounding cover. It is well known that the more settled country of the middle West sees the greatest death toll of smaller creatures. The very nature of the open farmlands brings birds and animals into close proximity to the roads,

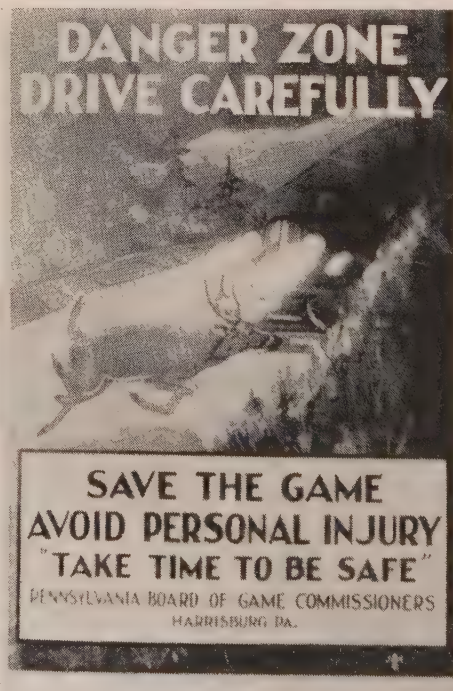
while the constant buzz of travel renders them indifferent and less cautious.

Few furred and feathered creatures can judge the speed of an onrushing car. They are not greatly alarmed by a vehicle a hundred yards or more away. In a second it is upon them. Frequently they are stampeded with fright and rush under the wheels instead of away from them. Rabbits will even jump from the safety of roadside grass to meet their doom, when suddenly confronted with the motor's roar. Certain other animals, and some ground birds, like the pheasant, are not easily swerved from

their course until the last moment. Then it is too late. Confident in their own speed, they fail to gauge that of an automobile.

Surveys of the highway indicate a tremendous toll when everything from a sparrow to a moose is considered. In certain seasons, and particularly after a rain, frogs and toads are killed by the thousands. Meadow mice, moles, chipmunks and squirrels are frequent victims. Snakes often are caught as they wend their way over the hard surface, and many turtles are found with their shells crushed. Near swamps and streams, and especially where watered land exists on both sides of the highway, the muskrat meets his doom. And once in a while, although more seldom, there will be a mink or 'coon.

In all kinds of country, we find the cottontail rabbit the num-



EDUCATION IS IMPORTANT

Such signs as this warn the motorist and should make him wildlife conscious

IN SUCH A SITUATION, STOP

The pheasant is fast, but it is likely to dart suddenly into the path of the automobile

ber one victim. It pops up with great frequency, and its zigzag tactics in the face of danger make it almost unavoidable. On some stretches of highway, at certain times, I have counted as many as one dead rabbit per mile—practically all killed within a twenty-four-hour period. From computations of many trips it is safe to say that the death toll of the cottontail rabbit on our highways is more than two million per year. A large percentage of these are killed at night.

The skunk is another unfortunate creature. Slow, confident and not easily disturbed, this animal pays dearly for its complacent manner and readiness to cross highways. Essentially a farm country denizen, it roams at will over settled land where roads are frequent and traffic heavy. All too often the headlights suddenly disclose that rolling ball of black and white, and if the brakes do not function quick enough there will be a new aroma in the neighborhood; and one less skunk.

Other animals of this size, like the woodchuck and opossum, are also hit, although far less often. Even big game, like deer and moose, suffer a tremendous loss each year. Records from such states as Michigan, New York and Maine bear this out forcibly. More than 800 deer were killed in these three states in 1938, while the deaths of 14 moose were tabulated in Maine. Roadside signs, marking deer crossings, are now a common sight. Drivers are asked to proceed with caution where deer trails cross the highway. Careful driving is the only answer to this problem.

Birds suffer a severe highway mortality just as do mammals, ground birds, and low-flying birds in particular.



So, too, do the night-flying birds. Owls, particularly screech owls, are frequently killed by automobiles at night, and, of all birds, the English sparrow is hit most often. Starlings, song sparrows, robins, flickers and woodpeckers are other feathered folk that are numerous on the highway mortality list. Most of them are killed in cross flight by vehicles moving at fast speed. Pheasants and quail, as well as smaller ground-nesting birds, are often victims of the wheel. Many of them nest close to the roads, which puts the young in jeopardy.

Altogether, the highway toll of wildlife in this country is tremendous. It is conservatively estimated at more than thirty million individuals per year. State Conservation departments, recognizing the highway hazard, are taking the only logical step to cut down the loss. This step is one of education. Since high speed, carelessness, or out-and-out indifference are the principal causes of loss, authorities are setting out to make motorists "wildlife conscious"—to cultivate a new regard for the hapless creatures that must cross the highways with-

out benefit of stoplight. Not all can be avoided, but caution and quick application of the brakes will go a long way in cutting down the highway toll.

Many of these wild victims of the Machine Age may be salvaged in one way. Most of our wildlife species will not stand further inroads by collectors for museums and private collections, so many of the highway casualties that are not too badly damaged as to form, fur or feathers may be prepared and preserved by the taxidermist. A number of school museums have been built almost entirely from such sources.

NIGHT-FLYERS PAY DEARLY

A screech owl victim. Night-flying birds are particularly difficult to avoid, and the lights blind them





To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south.

Far North and Far South in May

By ISABEL M. LEWIS

THE farther north one goes this month the fewer stars one sees for both days and twilight grow rapidly longer. In 50 degrees north latitude twilight lasts all night from June 2 to July 12. In latitude 60 degrees north it lasts throughout the night from April 22 to Aug. 21. At the North Pole there is perpetual day from about March 20, when the sun reaches the equator coming north, until September 23, when it is on the equator again going south. In fact, it appears above the horizon at the North Pole a few days before the first date and remains above it until a few days after the latter date. This is due to the effect of refraction, which elevates a celestial body above the horizon before it has actually risen, and causes it to remain visible for some time after it has actually set. During this period of more than six months at the North Pole the sun slowly winds its way upward, until at the beginning of summer, on June 21, it is at an elevation of about $23\frac{1}{2}$ degrees above the horizon. It then gradually returns to the horizon. For a period nearly equal in length

it remains below the horizon and hidden from our view.

During this long polar day the continual light of the sun blots out the constellations that appear during the long Arctic night of nearly six months duration. The constellations that would be seen at the North Pole in summer, if the sun were not always above the horizon, are the same that appear in winter, for, at the North Pole, the stars do not rise or set. The pole-star, Polaris, lies nearly in the zenith. The horizon coincides with the celestial equator, so all constellations north of the equator circle around the pole in a twenty-four-hour period, never disappearing below the horizon. Stars south of the equator never appear above it, nor do the planets and the moon when they are south of the equator.

North of latitude $66\frac{1}{2}$ degrees one may see the phenomenon of the Midnight Sun, that is, the sun on the meridian due north at midnight. At that latitude the midnight sun is visible only on the longest day of the year, when the sun is farthest north; but with increasing latitude

the sun is seen at midnight for increasingly longer periods, until, at the North Pole, it may be seen for six months.

Although the number of hours during which one may observe the stars is greatly curtailed in summer, even in latitudes no farther north than 50 degrees, it is at least one advantage that the moon is less troublesome than in winter. The full moon always blots out the light of all but the brightest stars; but the full moon rides low in summer and high in winter. Since it is always opposite to the sun its diurnal path is the same as that of the sun six months earlier. So in summer the full moon is above the horizon for a much shorter period than it is in winter. At the North Pole the full moon is below the horizon in the six-months period from spring to fall.

In the Antarctic regions this month the long winter is well advanced. At the South Pole the sun has not been seen since shortly after March 20. The celestial equator and the horizon coincide at the South Pole just as they do at the North Pole. None of the stars that lie north of the equator are visible at the South Pole, although the southern portion of constellations that lie across the equator, such as Orion, Virgo, and Ophiuchus, appear along the horizon. As at the North Pole the stars do not rise and set but circle around the pole in a period of twenty-four hours. Most of the stars would be unfamiliar to us although we would recognize our old friends Spica, in Virgo; Rigel and Saiph in Orion, and Sirius in Canis Major. No bright star indicates the position of the South Pole of the heavens. Not even a star as bright as fourth magnitude can be found within ten degrees of the South Pole. Yet the heavens are magnificent with the strangely beautiful constellations of the southern hemisphere and the splendors of the southern portion of the Milky Way and the Magellanic Clouds. As the Big Dipper is to the inhabitants of the northern hemisphere so Crux, the Southern Cross, is to those who live south of the equator. Ursa Major, with its familiar Big Dipper, is easily recognized by everyone, even those who know no other group of stars in the heavens. As far south as the 40th parallel of north latitude its stars are always visible above the horizon at any hour of the night. Its "Pointers" point to the position of the North Pole of the heavens. In the far north it is the most magnificent constellation in view, its huge form riding high in the heavens. In position it is as far from the North Pole as the Southern Cross is from the South Pole. Both constellations are upon the meridian at the same time. They are best seen in their respective hemispheres in the evening hours at this time of year when they lie well above the pole and on or near the meridian.

The Southern Cross could be placed within the bowl

of the Big Dipper with plenty of room to spare. Of the four stars that outline the form of the Cross, Alpha Crucis, the star that is farthest south, is a magnificent double star of first magnitude. Gamma Crucis, which is half a magnitude fainter than Alpha, is at the opposite extremity of the Cross and is decidedly reddish in color. Beta Crucis and Delta Crucis, which lie in the cross arm, are respectively of the $1\frac{1}{2}$ and 3rd magnitudes. As the constellation crosses the meridian the line connecting Alpha and Gamma points nearly to the South Pole. The Southern Cross has been called the Timepiece of the southern hemisphere. Between 12h and 13h of sidereal time it is on the meridian above the pole. At that time the Milky Way forms a great arch reaching from the eastern horizon above the pole to the western horizon. In the center of this luminous arch and imbedded in it lies the Cross. In its southeast portion, and extending beyond it, lies the famous Coal-sack, not the "hole in heaven" that it appeared to be, but a great dark nebula obstructing the light from stars beyond it.

Crux, as well as the Big Dipper of Ursa Major, has its Pointers although they are not stars that belong to the constellation but Alpha and Beta Centauri, a few degrees to the east, which point directly to the Cross. They are stars of zero and first magnitude respectively, and about as far apart as the Pointers of the Big Dipper. If the line connecting Alpha Crucis and Gamma Crucis, in the upright of the Southern Cross, is extended southward about four and one-half times its length it will pass within three degrees of the south pole. The Southern Cross cannot be seen in the United States except in the southern tip of Texas and the southern half of Florida. It cannot be seen to advantage until one is well within the Tropics. From the earliest days of its colonization Brazil was called the land of the Southern Cross, and the Cross appears among the stars on the Brazilian flag as well as on the flags of Australia and New Zealand. To the early Spanish and Portuguese explorers it appeared as a symbol of their faith planted in the New World.

Venus is now increasing in brilliancy in the western evening sky, and will have its greatest brilliancy on May 20. It is easily visible, even in broad daylight, if one knows where to look for it. Now slowly approaching the sun, it will not be visible for more than a few weeks before it passes to the morning sky. Mercury is too close to the sun to be seen this month. Jupiter and Saturn are in the morning sky and also too close to the sun to be seen. Mars is in the western evening sky and sets about three hours after the sun. It is far from the earth at this time and fainter than a star of second magnitude.

RESTORATIVES

By OSCAR OSTLUND

These things are balsam for the mind oppressed,
And fountains where the spirit is renewed;
Forms in wild Nature; stars and solitude,
Music, noble words and quiet rest.

THE SCHOOL PAGE

★★★

EDITED BY DR. E. LAURENCE PALMER

Professor of Rural Education, Cornell University, and Director of
Nature Education, The American Nature Association

SUBSTITUTES

In March, the motion picture "Northwest Passage" was released throughout the country. After handing bouquets to all the actors, a writer in the *Syracuse Post Standard* ended with "a bow to producer Hunt Stromberg, director King Vidor and the unnamed crew who selected such perfect settings". This followed a discussion of the meticulous detail with which the producers reproduced the costumes worn on the march supposed to have been made by Major Rogers in 1759 to the village of St. Francis in Canada.

I have no idea how much money was spent in the production of that film. But I have an excellent idea that if anything was spent to guarantee that the setting was appropriate that amount was wasted. Almost any underpaid science teacher could have done a better job than was done by these producers in picturing the setting of Rogers' march. Personally I was amused at the presentation of the idea that anyone could walk all day in water not above the waist along the shores of Lake Champlain. I wished that some of the producers had tried it. They would have had experiences they deserved. I was disgusted with the assumption that a gang of men could noiselessly move boats over a ridge, in sight of an enemy camp, in broad daylight, without detection. But more than this, I gave up when the returning soldiers marched into an abandoned fort and found the ground covered with sage-brush the like of which does not grow within a thousand miles of the supposed "perfect" setting.

An ornithologist friend who saw this movie was thoroughly disillusioned when a wren tit of the West sang from the supposed hills of the East. Another friend joined with me in resenting making a soup of western lizards in an area where there are no lizards at all. One could criticise further this same picture but it would be futile. It is, however, inexcusable that an industry that boasts of the money spent in making its offerings true to life should not be more careful in making its natural history truly representative.

If "Northwest Passage" had been the only offender in this field, I should not feel like writing this article. It just happens to be the most recent of such films. Features of other pictures that have disturbed me in recent years in this respect are the farmyard in "Down East" bordered by the typical pepper trees of California; the insects used as a central theme for "The Perfect Specimen"; the huge azaleas (?) that a boy brought to his mother as trailing arbutus in "So Big". At the beginning of "The Maid of Salem", we were told that we could depend on the accuracy of the historical setting and almost immediately a boy drove a herd of Holstein cattle down the road. This breed was not introduced into America for nearly a century after the Salem witchcraft incidents. In one picture a kingfisher on a stick was made to behave like a woodpecker.

The errors of these pictures fade into insignificance, however, when we remember such natural history pictures as "Sequoia" and "Bring 'Em Back Alive". I should prefer not to write of the former. It might not

be accepted by our editor. For the latter, I can only marvel at the gullibility of a public that acclaimed a fight between an Asiatic tiger and an African lion, supposed to have been pictured in southeastern Asia. The public support that these and similar pictures get is one of the best bits of evidence we have that the public loves to be humbugged now just as well as it did in the days of Barnum. The discouraging part is that, with only a little modification here and there, the pictures could have true educational value.

There is no reason whatever why an educator should direct criticism solely at producers of moving pictures because of their failure to present the truth. Some of the worst offenders are the educators themselves, who feed children substitutes when the real things are more interesting, and when the real things are generally easily available. One of the things that have taken the fancy of these educators, who glibly speak of science so that they can cover up their ignorance of the scientific method and of the facts of science, is the study of dinosaurs and their kin, which is widely included in elementary school courses of study. Children model tyrannosauruses and dimetrodons the like of which no man ever saw, while their teachers shrink from handling in class some of the harmless living relatives of these creatures. In fact, some of these teachers would not think of having living reptiles in a room.

A movie producer bent on picturing ancient life produced a picture of a fight between a tyrannosaurus and a dimetrodon and then began to worry about the sounds that would issue from such an encounter. Dr. Caster of the University of Cincinnati happily suggested that a Bronx cheer would be appropriate since dimetrodon died some 100,000,000 years before the "first tyrannosaurus had an evil gleam in his eye". A Nebraska professor asked for fair play when one tried to match a six-foot dimetrodon against a forty-five-foot tyrannosaurus, and a California professor said that even the oldest fossils on their faculty were not living when such a fight was staged so they could not speak authoritatively. It has been proposed that these professor paleontologists organize a Society for the Succor of Slandered Saurians, but it is feared that they would be kept so busy correcting the mistakes of the educators that they would have no time to do truly constructive work.

The willingness of educators to accept substitutes is illustrated in a project generously financed to develop the teaching of science, and other subjects in the school, through the use of phonograph records. One of the proposed scenarios, which by the way has been squelched, developed the idea of biological balance by saying that the beavers cut down poplars in their swamps so that the white pines could grow there. It went on to present the conservation idea by making a frog pond in a woods by lining a spring with stones, the absurdities of which might be appreciated by any outdoor boy even though they did not seem to be resented by some Ph.D.'s. In justice, it must be mentioned that this particular project apparently is solving a difficulty that need never have arisen.

I have had experiences with at least three commercial producers of educational movies on natural history subjects. Fortunately, they have been increasingly happy, but some of the earlier experiences were distinctly otherwise. One film, still in circulation, purporting to represent the life history of one of our native silk moths, had larvae, cocoons and adults of at least four species arranged to represent a single sequence. The manufacturer who hired me to pass on the authenticity of some of his films fired me because I would not approve this sort of thing. He said a master film had been made and this could not be changed, so we shook hands and parted company right then and there. It was not "practical" to remake the master film any more than it was practical for another film firm to re-label some terns that were called gulls. Again the master film had been made and that was all there was to it. It is gratifying that these commercial concerns are showing a more genuine interest in accuracy than they did formerly, but it would be fine if the producers of popular films would do something to get those everlasting western meadowlarks out of New England cow pastures, and to lay at least a few love scenes where some Eastern frogs would lend a little familiar atmosphere to the pictures.

In the "Off the Record" section of *Nature Magazine* for March, 1940, some comment was made for the bird song records made by the whistlers Gorst and Kellogg as contrasted with the actual recordings of the songs in the records issued by Brand. It was said that the substitute calls had superior entertainment value and might therefore prove the more popular. If this is so, it is unfortunate from an educational standpoint.

Let's not cheer for things that we know are substitutes. These are times of organized propaganda for every imaginable field of human interest. We hope the truth is somewhere in the maze of what is offered us. We need everlastingly to be trying to separate the wheat from the chaff and we cannot do it by modelling fighting dinosaurs, the like of which no man ever saw, by willingly accepting pepper trees in a New England farmyard, and lizards in a New Hampshire soup.

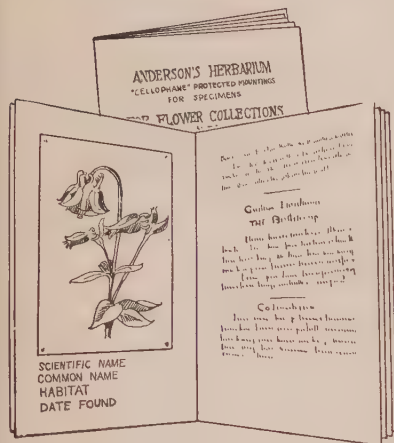
We get just what we deserve in religion, in government and in education. Few fields offer better opportunities for one to get down to fundamental, demonstrable truths than does the field of natural history. Let us get busy and develop that critical attitude about which we do so much talking and so little practicing. Let us stop tooting for substitutes.

Dr. Palmer would appreciate hearing from any teacher with comments or suggestions bearing upon the value of the special educational inserts that appear in alternate issues of *Nature Magazine*. It is his desire to make these of the highest interest and use. He will welcome suggestions as to fields to be covered. The tenth in the insert series will appear in the June-July issue.

Ride Your Hobby!

Preserve your specimens of rare and wild flowers. Make your trips into the woods and fields of lasting interest and educational value.

Anderson's Herbarium Will solve your problem



These herbariums are designed for the protection of flowers, leaves, and other plant parts by placing the specimens under Cellophane. Excellent for TEACHERS, STUDENTS, CAMPER, HIKERS and nature lovers in general. Successfully used in summer camps, boys and girls organizations and nature clubs.

THREE SIZES

"Camp Special", 5½" x 8¼" in bound form, contains twenty pages on which one side of each page is designed for holding specimens. The other sides of the pages have helpful information on collecting, identifying, structure, function, and description of poisonous plants, 25c each. Loose leaf, 7" x 9", Herbarium, 20 pages, 35c each. Loose leaf, 9" x 12", Herbarium, 25 pages, 50c each.

Educational. Teaches preservation of rare flowers; identification; flower structures and functions. Arouses interest in collecting and serves as a memory book of the past.

Send your order today

AMERICAN NATURE ASSOCIATION
1214 16th St., N.W., Washington, D. C.

Mail me postpaid the following Herbariums for which (check, P. O. Money Order) for \$..... in full payment is enclosed.

.....copies of Camp Special @ 25¢ Each
.....copies of 7" x 9" Herbarium @ 35¢ Each
.....copies of 9" x 12" Herbarium @ 50¢ Each

Name

Address

YOUR NATIONAL PARKS AND YOU

(Continued from page 265)

One morning in 1917, Director Stephen T. Mather received a virtual command, under the guise of a war-time emergency, to open the parks to cattle and sheep. After the "emergency", it took a long and bitter struggle to get the interlopers out again. At other times, when acquiring new areas, it has occasionally been necessary to promise life-time grazing permits to the consignors.

Enterprising manufacturers want to get material for making insulating fire-bricks out of one of the numerous Lassen National Park cinder cones. Other companies would like to mine the sulphur at hot spring deposits.

Even though a proposed park area has been thoroughly prospected, certain metal mining interests insist that the park can not be established unless authority to prospect and mine be given for at least a number of years. The mining promoters are probably honest in their contentions that this would not appreciably damage park values. The dumps are quite small; vegetation will eventually cover them. But roads are necessary to bring in heavy equipment, to carry out ore. Thousands of mine props must be cut from the forests. Miners must be provided with homes. And if the parks are opened to mining, why not also to lumbering, waterworks, power dams, grazing and farming?

If further raids are permitted, the national parks are doomed. One new successful looting will lead the way to a hundred more. It will destroy the park idea that was conceived around a campfire seventy years ago. It will spell the end of our national parks.

Short-sighted, avaricious, no commercial raider can realize the potential multiple use of a vast treasure that is not spent. A tree in a national park may be used and enjoyed year after year, generation after generation. Cut it down and what do we have? A few board lengths. Then a few dollars; dollars that are soon gone; spent, or vanished in stock markets and changing values. Turn a million head of sheep and cattle into the beautiful areas that have been set aside for the education, health and pleasure of all people. What do we have? Sheep range and cow pastures; stock yards and the end of primitive areas.

Our parks are constantly producing incalculable harvests of enjoyment, recreation and inspiration. Year after year, they yield rich crops of mental and physical stimulus to the growth and power of their owners—the American People. What do they mean to us? Regeneration of body and mind; reservoirs of national spiritual and physical strength; natural laboratories of scientific research. Let us carry on the idea of Cornelius Hedges. Let each one of us work to preserve this priceless heritage of future generations. Let us pass it on intact and unspoiled, to our children and our children's children—for all time.

Colorado Camp

A year ago we carried a brief note telling of the organization, under the auspices of the Huerfano Group of the Colorado Mountain Club, of a Nature Enjoyment Camp in the Colorado Rockies. A number of our readers were interested and five attended. This program is being repeated this year and details may be obtained from Paul W. Nesbit, Walsenburg, Colorado.



**SHE: "2 EXTRA DAYS IN COLORADO
BY RIDING THE DENVER ZEPHYR!"**

**HE: "YES, AND LOOK HOW LITTLE
OUR TRIP WILL COST!"**

She: Imagine spending a vacation right in the Rockies where it's cool and invigorating! And think of the thrill of riding that beautiful Denver Zephyr from Chicago to Denver.

He: And is it a honey! Diesel-powered, built of stainless steel and takes you more than a thousand miles just overnight! That saves a day each way!

She: More time to see all the sights. Denver and its mountain parks, Colorado Springs, Pikes Peak, Boulder, Estes Park—

He: George Simms says the cost of a Colorado trip is surprisingly low. Let's clip the coupon and get the illustrated booklet and rate information.

★ ★ ★

Burlington's special summer fares to Colorado are surprisingly low. And whether you ride the Zephyr or a fine steam train, you'll enjoy Burlington hospitality and the comfort of complete air-conditioning. Speedy service, also, from St. Louis to Colorado.

Travel independently or join a *Burlington Escorted Tour* with everything arranged in advance, relieving you of every travel detail. Either way, Burlington gives you the greatest travel value.

GOING TO SAN FRANCISCO WORLD'S FAIR?

Cool Colorado is right on the way. Enjoy a visit in this enchanting playground. Thence, through the heart of the glorious Colorado Rockies and the spectacular Feather River Canyon—to the coast. Magic daylight hours over one of the country's most scenic routes.



---MAIL THIS COUPON TODAY---

Burlington Travel Bureau

Room 429, 547 W. Jackson Blvd.
Chicago, Illinois

Send me your free illustrated booklets, rates and information about Colorado Vacations.

Name

Street and Number

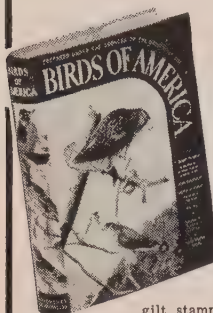
City State

☐ Check here for special information about All-expense Escorted Tours

NATURE BOOKS for Lovers of the Out-of-Doors

Whether you are fond of birds, animals, flowers or the countryside in general, you'll find the books below some of the most appealing and informative ever published. These are beautiful new editions, superbly bound in fine cloths and rich buckrams, illustrated in luxurious colors and half-tones. Originally up to \$17.50.

NOW ONLY \$1 to \$3.95



BIRDS OF AMERICA

Edited by the President Emeritus of the National Association of Audubon Societies and other prominent ornithologists—1,000 pictures, 1,000 birds, 1,000 pages! Over 100 famous Fuertes paintings in full color; over 100 eggs in natural size and color; Latin and common names, characteristics; eating, nesting and migrating habits. De Luxe Edition; size 8 1/4" x 11 1/4"; bound in extra heavy buckram, gilt stamped. Most comprehensive, beautifully illustrated encyclopedia of American bird life ever published. Originally 3 vols. at \$17.50. Now in one master volume—

NOW ONLY \$3.95

A GUIDE TO THE TREES

Carlton C. Curtis—600 varieties of trees described in this special compact field edition that will fit your pocket. 200 drawings; bound in waterproof fabrikoid.

NOW ONLY \$1.00

A PRACTICAL BOOK OF OUTDOOR FLOWERS

Richardson Wright—An invaluable handbook. Systematic, authoritative, complete—by the editor of *House and Garden Magazine*. Illustrated in color and black and white. Handsomely bound. Originally \$7.50.

NOW ONLY \$1.98

THE BIRD BOOK

Neltje Blanchan—Combining in one volume the famous *Bird Neighbors* and *Birds That Hunt and Are Hunted*. Birds classified by color and color combinations, with range, habits, migration, etc. 68 beautiful full-color drawings by Nellie M. Fairpoint. Originally \$5.00.

NOW ONLY \$1.98

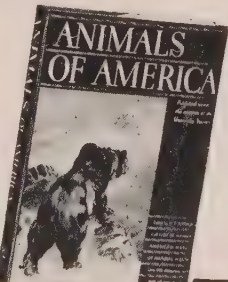
The New Illustrated Natural History of the World

Ernest Protheroe, F.Z.S.—Complete encyclopedia of animals, birds, fishes, insects, reptiles, etc. Over 300 photographs and 24 plates in beautiful full color. Originally \$5.00.

NOW ONLY \$1.98

ANIMALS OF AMERICA

Edited by H. E. Anthony—Over 200 illustrations, with 6 full pages in color. Designed for leisure as well as informative reading; includes scientific data, descriptions of life and habits of each animal. Most complete volume ever published on the subject. Handsome buckram binding. Orig. \$7.50. **NOW ONLY \$2.19**



USE THIS COUPON TO ORDER

Send no money. Just write on the coupon below the titles of the books you wish, fill in your name and address and mail. On delivery of books deposit with postman amount due, plus few cents postage. If you are not satisfied, simply return books within 5 days and your money will be refunded.

NATURE MAGAZINE
1214 Sixteenth Street, N.W., Washington, D. C.

Please send me the nature books whose titles I have written in below. On delivery I will deposit with postman amount due plus few cents postage. It is understood that if I am not entirely satisfied I may return the books within 5 days and receive my money back.

Name
Address
City State
() Check here if enclosing amount due. WE pay postage. Same money back guarantee applies, of course.

STREAM GARDENING

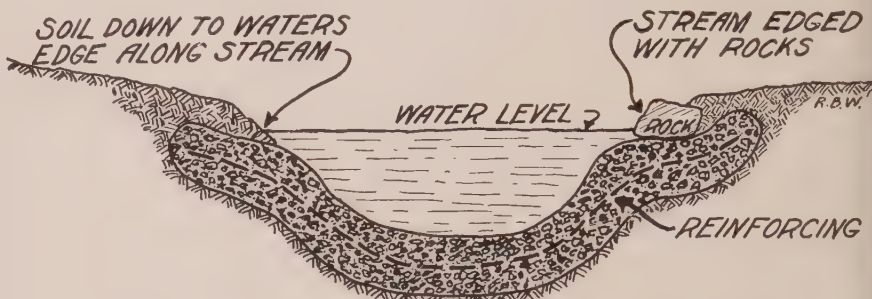
(Continued from page 294)

of water but the way it is handled that measures the charm of a stream garden.

Small pumping outfits may be purchased at moderate cost, or you can build your own. A washing machine motor and a pump from an old automobile can be rigged up by many handy gardeners. Be sure your pump runs

junipers, some of the dwarf forms of cotoneaster, numerous rock and alpine plants, as well as ferns, vines, and many moderate growing perennials, are suitable. Avoid bedding plants and such things as zinnias, petunias, nasturtiums and the like. They simply do not belong. There are so many things well suited that it is poor taste to use the obviously wrong kinds.

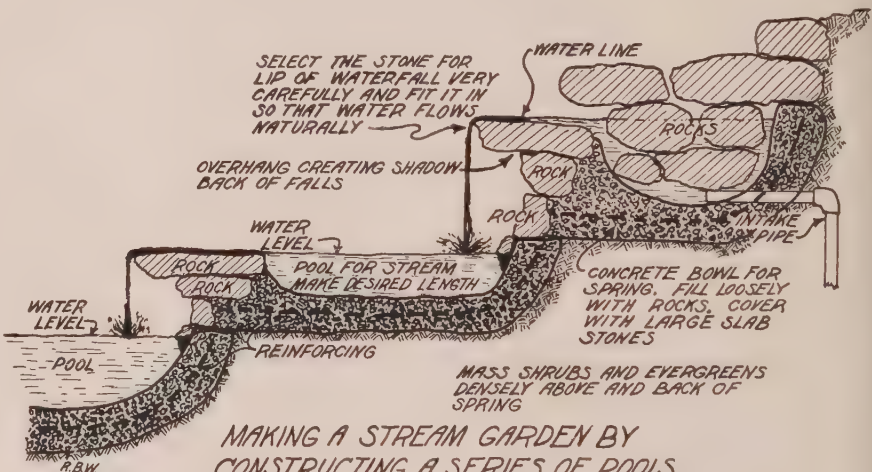
The cost of a stream garden may be little or much depending upon one's desires and



CROSS SECTION THROUGH CONCRETE BOTTOM OF A STREAM

quietly, as nothing detracts as much from the "natural" as noise from mechanical sources. Also, you must carefully screen the intake of your pump so that dirt, sand and

ability to spend. If you do not care about cost, the sky is the limit, but almost any handy person with ability to appreciate and pattern after Nature can build a stream



MAKING A STREAM GARDEN BY CONSTRUCTING A SERIES OF POOLS

other debris can not get into it and grind out the bearings or blades. These are details your ingenuity can easily solve, but they must not be forgotten. Also, do not forget to install your pump so it may be drained for winter. Carelessness here spells disaster.

The planting along and around a stream should be kept strictly informal. Clipped evergreens are as much out of place as a party gown at a funeral. Also, planting should be kept to scale. Plants that grow too vigorously will dwarf the stream they should beautify. There are many low-growing dwarf evergreens and shrubs ideally suited for such places. The trailing and prostrate

garden for a very modest outlay. It need not be extensive as size does not measure quality or charm. A tiny stream a few yards long with a miniature cascade dropping into a small pool can be as delightful as one wandering a hundred feet and aping Niagara Falls.

Quality of detail is what counts. If it looks as if Nature made it, and your garden visitors congratulate and envy you possession of a property with a "natural" spring and stream, then your garden is a success. Regardless of its perfection, the satisfaction you get from it will be far greater than the outlay involved.

Alpine Flowers

Volkmar Vareschi is a mountain climber and a botanist, a man who delights in scaling heights, but in so doing does not overlook the beauties of the Alpine flora along the way. His dual interests are fused in the text of the book *Mountains in Flower*. While descriptive of the flowers, the text does not

approach them from the purely botanical point of view. The species dealt with are European, but the majority of them are closely related to our own Alpine flowers. Fully as effective as the author's prose are the beautiful pictures of Ernst Krause. There are seventy-two of these plates. Published in this country by Macmillan, this book lists at three dollars.



COMETO THE CHAMBERLIN

You'll enjoy 3 vacations in one here. There are sports activities, many places of historic interest, and the atmosphere of the Army and Navy at history's birth-place! You'll see beautiful gardens, and old St. John's Church. The Chamberlin's building and grounds are delightful—the sea view magnificent. Delicious food. Swimming indoors and out. Only a few hours away. Write for special weekly and week-end vacation rates.



See Nearby

WILLIAMSBURG

Yorktown • Jamestown

Fort Monroe • Mariner's Museum

The
CHAMBERLIN

Sidney Banks, President
OLD POINT COMFORT
VIRGINIA

Where Credit Is Due

In the popular feature in our April issue, under the title of "The Story of a Stream", inadequate credit was given for the splendid pictures used. These were all taken by the author, Arthur H. Fisher, as indicated, but they were taken by him for the United States Bureau of Fisheries. Some of them were frames "blown up" from the Bureau's excellent motion picture, "Speckled Beauties". The others were pictures made for the Bureau on several of its research projects and in its hatcheries. The credit line should have read: "Photographs by Arthur H. Fisher. Reproduced by courtesy of the United States Bureau of Fisheries." We hope that this notice will inspire readers to turn back to the April issue, to re-read this important and permanently valuable article, and, in so doing, give the Bureau of Fisheries credit for making available this pictorial evidence of its activities in the field of conservation.

Color Exhibition

From April 16 to June 2 a display of color photographs will be on exhibition at the Newark, New Jersey, Museum. The display will take up the fundamentals of color photography, descriptions of the chief processes in use, special applications of color photography to the fields of science, illustration and advertising. There will be a section of color motion pictures.

Shade Tree Meeting

The Sixteenth National Shade Tree Conference will be held in Detroit from August 27 through August 30, bringing together horticulturists, plant pathologists, entomologists, foresters, landscape architects, estate, park and cemetery superintendents, nurserymen, and manufacturers and distributors of materials used in scientific tree preservation. The meetings are open to anyone interested in trees. Sessions will be at the Book-Cadillac Hotel.

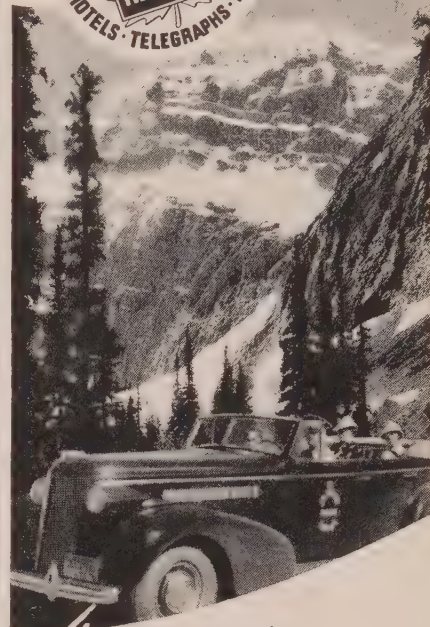
Herpetological Society

With twelve active local members and four corresponding members in different parts of the United States, the New York Herpetological Society has been established. Meetings are held Saturday afternoons at the American Museum of Natural History. Interested local people should get in touch with Howard Epstein, 210 W. 78th Street, secretary of the Society. James McGrath is president. Dues for corresponding members are only ten cents a year.

Correspond?

We have listed the names and addresses of a number of people wishing to exchange specimens and correspond about their special enthusiasm in the Nature field. We now add to that list the name of Miss Eunice Kanne, Grantsburg, Wisconsin, whose specialty is rocks and minerals.

We also have a request from Donald Bender, 38 Center Street, Chatham, New Jersey, to list him as interested in entomology and in exchanging specimens, and from Tony Pucini, 124 W. Parmenter Street, Newburgh, N. Y., as similarly interested in herpetology.



4200 miles of Alpine Playground **JASPER** IN THE CANADIAN ROCKIES

Plan a perfect vacation this summer! Come to Jasper and be thrilled! Golf—play tennis—ride—swim—hike—fish or loaf amid the glittering peaks of the majestic Canadian Rockies! Enjoy the spectacular 75-mile motor drive in Jasper National Park right to the Columbia Icefield—largest accessible glacial cap south of the Arctic. Relax at Jasper Park Lodge—with its luxurious accommodations and charming informality. Rates with meals from \$8 a day.

Your vacation dollar goes farther in Canada this year. **No passports required.** As always, a friendly welcome awaits you at the Border and throughout the Dominion.



Low fares. Come by the through air-conditioned **Continental Limited**, or, if you prefer, come via rail and Trans-Canada Air Lines services. Call or write any Canadian National Office for illustrated booklets.

Boston . . . 186 Tremont St.	New York . . . 673 Fifth Ave.
Buffalo . . . 22 N. Division St.	Philadelphia . . . 1500 Chestnut
Chicago . . . 4 S. Michigan Blvd.	Pittsburgh . . . 355 Fifth Ave.
Cincinnati . . . 206 Dixie Term.	Portland, Me. . . G.T.R. Sta.
Detroit . . . 1239 Wash. Blvd.	San Francisco . . . 648 Market St.
Duluth . . . 428 W. Superior St.	Seattle . . . 1329 Fourth Ave.
Kansas City . . . 101 West 11th St.	St. Louis . . . 314 No. Broadway
Los Angeles . . . 607 S. Grand Ave.	St. Paul . . . 335 Robert St.
Minneapolis . . . 711 Marquette	Wash., D.C. . . 922 15th, N.W.
	Montreal, Que. . . 360 McGill St.

CANADIAN NATIONAL
TO EVERYWHERE IN CANADA

FOR
Pleasant Memories
MEMORIAL DAY

POCONO MANOR



The top of the Poconos to you Memorial Day. Mighty peaceful here, cool and friendly. No stiff formality. Golf, riding, tennis. Farm-fresh food. Bring the family for a

holiday crammed with living, loafing or activities. Go back with pleasant memories.

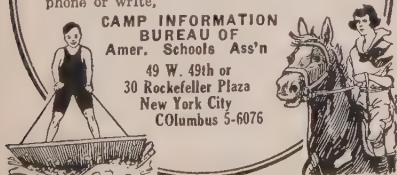
HERMAN V. YEAGER, General Manager
POCONO MANOR, PA.

CAMP'S Information

FREE Information. Select a camp best meeting needs of your son or daughter. 25 years' service. Catalogs and inspectors' reports gratis. Give age and needs of boy or girl and approximate expense desired for season. Visit, phone or write,

CAMP INFORMATION BUREAU OF Amer. Schools Ass'n

49 W. 49th or
30 Rockefeller Plaza
New York City
Columbus 5-6076



What - When - How

Quality **SW** since 1897



Sow **Staigreen** LAWN SEED

FOR A PERMANENT LAWN

STAIGREEN is a modern lawn formula, free of troublesome weeds and crabgrass, producing under normal conditions a permanent lawn of beautiful deep-rooted turf, luxuriant and emerald-green from early Spring to early Winter... Don't experiment, sow STAIGREEN.

Pamphlet "How to Build a Permanent Lawn" free in every package.

2½ lbs. \$1.60 12½ lbs. \$7.25
5 lbs. \$3.10 25 lbs. \$14.00

Delivery prepaid anywhere in U. S. A.

Use one pound for a quick new lawn 10 x 20 ft. — half quantity for renovating old lawn.

EMERALD GRASS FERTILIZER

25 lbs. \$1.75 100 lbs. \$5.00

For new lawns use 10 lbs. to 200 sq. ft. — half quantity for renovating.

Free on Request—Recommendations for your particular problem.

Stumpp & Walter Co.

132-138 Church St. Dept. N
NEW YORK CITY

Branch Stores:
White Plains, N. Y. Newark, N. J.
Stamford, Conn. Englewood, N. J.
Hempstead, L. I.

GROW BETTER ROSES



TRI-GEN, the combination spray, helps give you better roses. Controls black-spot and mildew; kills many insect pests. Keeps foliage strong, vigorous. Economical, easy to apply—just mix with water and spray. Buy at garden supply stores, or write for free helpful bulletin.

ROSE MFG. CO., 257 Ogen Bldg., Phila., Pa.

TRI-GEN

WATER LILIES

Special May
Collection \$1.50

Odorata Gigantea, pure white
Marliac Chromatella, yellow.

Write for our 1940 catalogue featuring Our Special \$1.00 Collections. Other Collections to \$12 (postpaid). Largest Water Lily Growers on Long Island.

S. SCHERER & SONS

20 Waterside Ave., Northport, L. I., N. Y.

TROPICAL FISH

You can have a small section of the South Seas right in your home... richly colored tropical fish... exotic in shape... swiftly darting among the undersea foliage. Complete instructions for starting an aquarium and water lilies in our BIG FREE CATALOG.

Eastern Gardens, Dept. N5
Kissena Blvd. & Rose Ave., Flushing, N. Y.

BRINGING UP
FLOWERS



"BLACK LEAF 40"

properly applied is sure death to aphids, leafhoppers, leaf miners, most thrips, young sucking bugs and similar insects. It kills by contact and by fumes. Spray whenever you see these insects and keep your garden growing.

A Little Goes a Long Way

"Black Leaf 40" is surprisingly economical—one ounce makes six gallons of effective spray. Full directions on labels and in leaflets.

Insist on original factory sealed packages for full strength.

Tobacco By-Products & "Black Leaf 40"
Chemical Corporation,
Incorporated
Louisville, Kentucky

Black Leaf 40

LOOK FOR THE LEAF ON THE PACKAGE

For Fragrance in your garden

all Summer long...
tuck a few

ROYAL FRAGRANCE HELIOTROPE

here and there, in your planting, and the result will be charming and colorful.

3 plants... \$1.00
12 plants... 4.00

With this special offer we will send our new colorful 48 page catalogue which lists the best in roses, chrysanthemums and perennials.

Lott's

BOX 24
MADISON, N. J.

"Serving gardeners for 36 years"

WHITHER SOILLESS GROWTH?

by Gessner G. Hawley

Little was heard of the idea of growing plants without benefit of soil until a few years ago, in spite of the fact that scientists had been doing it in botanical research laboratories since Lee's surrender was news. Indeed it was known even before Lee was born. But during the last decade soilless culture has been widely publicized, with results to date that may be summarized as: thousands of actively interested experimenters and hobbyists; dozens of commercial installations; no less than 139 prepared nutrient mixtures ranging in consistency from liquid to solid (even a gas has been tried); a great deal of important work at state agricultural experiment stations and universities; five books on the subject; and several hundred magazine articles and news stories of varying shades of veracity. The time has come to attempt the proverbial separation of wheat from chaff, and to give some idea of the status of soilless growth today.

The principles and applications of growing in nutrient solutions have been carefully studied and explored by competent, disinterested scientists in many parts of the United States, notably New Jersey, Ohio, California, New York and Connecticut. In spite of the inevitable group of exploiters and feature writers, who insist on having plants thrive in bureau drawers, under stoves, or in coal bins, the essential facts and the rudiments of a correct technique have been conscientiously set forth by these experts, and applied by unknown thousands of growers.

Although there are probably many of the "good earth" school who feel that there is something traitorous about abandoning the soil, which has been the mainstay of mankind since civilization began, the extent of popular interest in soilless culture is undeniably great. The following facts attest this statement: after running articles about it, several leading magazines received tens of thousands of requests for further information; over two thousand such inquiries resulted from a single short radio broadcast; sales of books, at a conservative estimate, total about 50,000, in addition to vast numbers of experiment station bulletins. Accounts of the very successful results obtained in growing vegetables on Wake Island for Clipper plane passengers, together with several displays of sand and water culture at the two World's Fairs, have unquestionably done much to convince the public of the practicability of this system. The many types of prepared salts, which have been on the market for some time, have tended to remove the hesitancy of those who lack, or think they lack, the ability to mix the ingredients themselves.

What are the real commercial possibilities of soilless growth? Some

for your Garden

enthusiastic statistician has blurred the optimists' vision of the Dust Bowl blooming forth into a new and greater Eden by computing that the cost of installing large-scale soilless-growth equipment would run to about \$4000 per acre. While this estimate would probably deter anyone outside the District of Columbia from attempting to reclaim wasteland by this method, it is a fact that many commercially successful units are in operation. One of these is on Cape Cod, Massachusetts, where tomatoes grown in December brought the scandalous price of seventy-five cents a pound in the Boston market. Another, in Montebello, California, has shown a consistent profit for more than a year; here again the best crop is tomatoes, although tobacco, potatoes and other common vegetables have been grown to some extent. Several universities are sponsoring tank farms, most of which have been rather successful. So it may be concluded that, in general, soilless methods can be carried on in small installations (one-tenth to one-quarter acre) at a reasonable profit. It remains to be seen what the practicable limit of size will be.

Coming from the fields into the home, quite a few novel and interesting applications of soilless growth may be found. Hanging baskets, pots attached to reading lamps, and ready-made containers for window-boxes and solariums are making their appearance. Several new apartment houses in New York City are planning to incorporate the idea in their court gardens and foyers. Although some flowers and plants do better than others, there are few, if any, varieties that fail to respond to nutrient treatment. Orchids have been successfully grown without soil, and also pineapples, cactuses, gourds, and ferns. Even young and fruit-tree seedlings can be started and grown to some height in nutrient solution. Especially satisfactory for house plants are tuberous begonias, calla lilies, gladiolas and roses. A word may be said here regarding prepared mixtures of nutrients, of which, as has been previously remarked, there have been 139 kinds all told. Many of these are very good, but a few of them leave something to be desired; it therefore behooves the buyer to investigate before purchasing. On the whole, it is well either to buy mixtures only from makers of established reputations, or to mix the ingredients personally, following carefully directions obtainable in authentic books on soilless growth, or in pamphlets issued by experiment stations. As experimentation with new agents and methods continues, it is certain that this innovation in horticulture will take its place with the many other technological advances that have done so much to increase the productivity of the United States. Mistakes have been made, and probably will be made, but the basic theory of soilless culture can be regarded as scientifically sound.

Yew Hedge 15 cents a foot

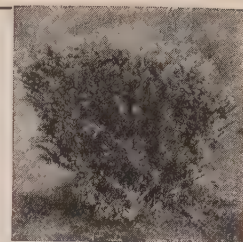
Japanese Yew (*T. capitata*), tree form, is the best evergreen for a medium-sized hedge in the north. Set 18 inches apart; thrives in sun or shade, and any soil.

8 inch transplants, \$24 per 100 (15 cts. per foot of hedge).

10 inch transplants, \$35 per 100 (23 cts. per foot of hedge).

OUR 1940 SHORT GUIDE describes and pictures hundreds of rare trees and shrubs. Copy mailed free on request.

KELSEY NURSERY SERVICE
50-Q Church Street New York City



KELSEY'S BERRYBUSH YEW

for low hedges or specimens. Multitude of red berries. 12 in. transplants, \$5.50 for 5, 2 ft. heavy B.B., \$5.50 each.

USE Scott's TURF BUILDER

for a healthy, green lawn . . . it's the complete food for grass.

O. M. SCOTT & SONS COMPANY
85 Main Street Marysville, Ohio

"GARDENERS heading South will be interested in these two books from the University of North Carolina Press."

—A. H. HERRICK in *Garden Digest*.

CAROLINA GARDENS

by E. T. H. SHAFFER

"Anyone who has visited or plans to visit the gardens of the Carolinas will find joy in CAROLINA GARDENS."—*Nature Magazine*.

"Mr. Shaffer brings to his writing an enthusiasm and skill that make the gardens live. His painstaking care for accuracy in description and historical background makes this book especially valuable for students of garden culture."—*Home and Gardens of Tomorrow*.

"A delightful book for browsing, an important reference work, and a valuable contribution to Carolinian literature."—*Charleston News and Courier*.

• 6½" x 9½", 328 pages, 48 pp. of illustrations, colored end sheets and jacket, \$3.50.

TREES OF THE SOUTH

by CHARLOTTE HILTON GREEN

A friendly, informal book which is nonetheless thorough and gives all important information needed about the many distinctive trees of the South.

"The distinguishing characters of each species are clearly explained and graphically illustrated. . . The illustrations . . . are admirable. Altogether a beautiful book."—Arthur Harmount Graves in *Torrey*. "One of the most attractive books of its kind which we have seen."—*Dallas Morning News*.

• 5½" x 8½", 551 pages, indexed, 445 photographs and drawings, \$2.50.

At all bookstores or from:

The University of North Carolina Press, Chapel Hill, N. C.

DELPHINIUM ARISTOCRATS

"DREAMS OF BEAUTY" HYBRID—The dependable Hybrid. Mildew and heat resistant. Gorgeous shades of lightest blue to the deepest Gentian blue; some have pink fillings; some orchids; many doubles.

Thrifty blooming size; 12 for \$1.00; 30 for \$2.00.

Large 2 yr. field-grown; 6 for \$1.00; postpaid.

CHINENSIS "CAMBRIDGE BLUE"—A branching type. Grows 2' to 3' in height. Flowers of brilliant velvety blue. Stay in bloom longer than other Delphiniums.

Blooming size; 20 for \$1.00; 50 for \$2.00.

Large 2 yr. field-grown; 6 for \$1.00 postpaid.

ELATUM "ICEBERG"—The pure white strain. Strikingly beautiful in the garden. Ideal for cutting.

Large 2 yr. field-grown; 4 for \$1.00 postpaid.

Descriptive catalog of perennial and rock plants, listing over 200 varieties, on request.

HEREFORD'S GARDENS
Oakford - - - Illinois

NOW TRY IT YOURSELF!

GROW PLANTS without soil!

It's a fact, not a fad! At little cost of time or money, you can grow plump tomatoes and other vegetables, fancy fruits and beautiful flowers—in water, sand or cinders. Read the book that shows you how to set up the simple equipment—mix your own chemical plant food—tend the plants—conduct fascinating experiments—harvest your "crops." **SOILLESS GROWTH OF PLANTS** shows you how to begin at once.

\$2.75 at your bookstore, seed or department store—or mail coupon on our MONEY BACK OFFER



REINHOLD PUBLISHING CORPORATION
Dept. 71, 330 West 42nd Street, N. Y. C.

FOR 5 DAYS' FREE EXAMINATION, send me a copy of "SOILLESS GROWTH OF PLANTS" by Ellis and Swaney. I will pay postman \$2.75, plus few cents postage. If within 5 days, I decide not to keep it, I may return the book for a full refund.

Name.....

Address.....

City.....State.....

☐ Check here if you prefer to enclose remittance, thus saving postage. Same money-back guarantee.

CLASSIFIED ADVERTISING



BOOKS



BOOKS ON FORESTRY

FOREST FACTS FOR SCHOOLS

336 pages, 34 illustrations, cloth bound. Book for pupils in Grades 5 to 12. Exercises and new-type tests follow each division of the text matter. \$1.00.

FORESTS AND MANKIND

250 pages, 66 cuts and illustrations, cloth bound. Convincing knowledge of the importance of the forests in their historical, social and economic relation to mankind. \$3.00.

TREES AS GOOD CITIZENS

268 pages, 16 full color plates, 125 other illustrations, cloth bound. This book tells the whole story of the shade tree. \$2.00.

NATURE BOOK DISTRIBUTORS
1214 16th Street, Washington, D. C.



BUTTERFLIES



20 LIVING COCOONS \$1.00; 2 doz. living Silk-worm Eggs, 25c; 2 living Mantis Egg Cases, 25c; Collapsible Insect Net, \$2.10; Cyanide, 70c lb. (Express Collect); Holland's Butterfly Book, \$9.00; Moth Book, \$4.50; Riker Mounts, Forceps, etc. Free List. **NATURE'S HOUSE**, Platteville, Wis.

COCOONS; the original \$1.00 dozen including Luna, 1c; others 50c dozen up. **MAYNARD**, 1192 Lewiston, Rochester, N. Y.



CAMPING



HACKMATAACK—A Nature Camp in the Berkshires—for boys 9-15 years. Specializes in nature, camping, hiking, woodcraft. Camping trips to White and Green Mountains, Berkshires, Taconics, July 1 to Aug. 31. Fee \$225. Write **GEORGE F. DILLMAN**, Edgewood School, Greenwich, Conn., for folder.



FILMS DEVELOPED



IMMEDIATE SERVICE!—Better pictures. Sixteen guaranteed prints from roll, 25c. One colored or two Plain Enlargements and 8 guaranteed prints 25c. Sixteen reprints only 25c. **SPECIAL!**—Coupon for 8x10 enlargement given with every 25c worth Kodak finishing. **ONE DAY SERVICE!** Details and Film Malters **FREE** on request. **American Studios**, Dept. 10, LaCrosse, Wisc.



HORTICULTURAL



WILD Flowering Plants. Catalogue. Three Laurels, Marshall, N. C.



HEMEROCALLIS



MODERN HYBRID DAYLILIES. Price list free. Six different Hybrids \$1.25 labeled, prepaid. **GEO. W. HUNTER-GROWER**, DOWAGIAC, MICH.



INDIAN CURIOS



100 Good ancient arrowheads, \$3.00; Tomahawk head 50c. Flint knife 25c. Illustrated catalog 5c. **H. Daniel**, Hot Springs, Arkansas

30 Genuine Indian arrowheads, \$1.00. Catalog. **GEO. HOLDER**, Glenwood, Ark.

INDIAN Relics, beadwork, coins, minerals, books, curios, weapons, dolls, old glass. Catalog 5c. **Indian Museum**, Osborne, Kansas.



MINERALS



BEAUTIFUL WYOMING FOSSIL FISH, ETC.—List. **M. C. Burton**, 2963 Gresham, Chicago.



PHOTOGRAPHY



"HOW TO MAKE GOOD PICTURES". Twenty-third edition now available. Up to date in every respect with details of Kodachrome and Infra-Red photography; new chapters include Stunt Photography, Flower Photography, Night Photography, Indoor Portraiture, Composition and many more new features. At 50c this book still remains at the head of our "must" list. **NATURE BOOK DISTRIBUTORS**, 1214 16th Street, Washington, D. C.



SCIENTIFIC



TELESCOPES, Microscopes, binoculars; 1940 bargain catalog free. **BROWNSCOPE CO.**, 5 West 27th Street, New York.



MICROSCOPE



REAL Standard Size Microscopes. No junk! Used, Cheap. Stains, reagents; prepared and plain slides and covers. Send stamp for bulletin. **Harry Ross**, 70 West Broadway, N. Y. C.



SEA SHELLS



SEA SHELLS for sale; Land, Fresh Water and Marine. Specify lists desired. **Mrs. F. K. Hadley**, 88 Oliver St., Malden, Mass.



TAXIDERMY



TAXIDERMY SUPPLIES—QUALITY Artificial Eyes, Teeth, genuine Jonas head forms. Tools, materials, etc. Everything for the progressive taxidermist. Send 10c for big illustrated catalog. **Jonas Bros.**, 1023 Broadway, Denver, Colorado.



TEACHERS



ROCKY MOUNTAIN Teachers' Agency. Wm. Ruffer, Ph.D., Manager, 410 U. S. National Bank Building, Denver, Colorado. If available write for information and enrollment card.



WILD FLOWERS



IN COLORS—60 post cards, 25c doz.; 64 2 x 3 in. stickers 55c; book of 365, \$3.95; 50 lantern slides & lecture rented 1 day \$3.75 & postage. Books, slides or photos (7000), movie films. Membership & magazine \$1.50 a year; Junior Chapters of 25 or more 10c per member. **Wild Flower Preservation Society**, 3740 Oliver St., Washington, D. C.

COUNTRY ESTATE

New Hampshire Colonial

For sale, 420 acres on gravel road near east side main highway, among lakes and streams, facing Ossipee Mountains; three trout brooks cross this land, with natural conditions for development of small private ponds; one-third mile frontage on Garland Pond; located in good neighborhood; house of 14 rooms, with electricity, telephone; many old features, such as paneling, sliding shutters, Christian doors, old hardware and fireplaces; excellent example of early American architecture in country with rolling fields, mountain views, woodlands, brooks, and century-old stone walls. Habitat for all indigenous birds and animals. Ideal for private preserve or sanctuary.

MARJORY GANE HARKNESS
WONALANCET, N. H.

At the World's Fair

In order that teachers, students and others with specialized interests may better be served at the 1940 World's Fair in New York, a Department of Public Education has been established. Recognizing that the Fair is, in itself, an educational institution, but that it is not easy for visitors to find many of the things in which they are specially interested without waste of time and effort, this department has been set up to give helpful guidance. It will be under the direction of Dr. Rudolf Kagey of New York University. A series of leaflets has been prepared and will be sent to teachers and school administrators on request. Some of the titles are: *Science at the Fair*, *Art at the Fair*, *Exhibits for the Elementary School Child*, *Social Studies at the Fair*, *Food*, *Decoration and New Products*. These are available from the assistant director of education, New York World's Fair, New York City.

Bill, Bird Bander

We knew, editorially and by correspondence, both Edna Hoffman and William J. Evans. If you'll leaf back through bound volumes of Nature Magazine you will find the writings of the former and the pictures of the latter. The next thing we knew a feature by them both (February, 1940, page 89) turned up, with the information that Miss Hoffman had added Evans to her name. Now comes for review a book entitled *Bill and the Bird Bander* by Edna H. Evans, who has dedicated her text to "Bill", who supplies the illustrations. It is an entertaining story of birds and bird-banding told informally and informationally at the same time. It is a book that every boy or girl interested in the outdoors will love, and we don't see any reason for limiting its scope to the younger set. It is a happy collaboration, of which, we trust, there will be more. Published by John C. Winston Company, the book sells for \$1.50.

New Jersey Birds

A careful census of the bird life of the park system of Union County, New Jersey, has been made by Dr. James S. Wiant of the Westfield Bird Club, and he has listed 172 different birds. Because of the completeness of his survey it has been mimeographed by the Union County Park Commission, Warinanco Park, Elizabeth, New Jersey, and is available from that source.

Chantecler

Geneticists will be interested in the successful development of a Canadian breed of poultry named Chantecler at the Oka Agricultural Institute by Brother Wilfrid, a Trappist monk and member of the faculty of Montreal University. Further information may be obtained from the Institute at La Trappe, Quebec, Canada.

Likes Turtles

Charles R. Dutton of Box 25, Stillwater, Maine, is interested in turtles and would like to correspond with others sharing his enthusiasm. John Lomer of 206 N. Miller St., Newburgh, N. Y., is interested in reptiles and would like to correspond.

ON THE RECORD

We seem, unintentionally, to have given a wrong impression or two in reviewing the recordings of actual bird songs made in the wild by Mr. Brand and others at Cornell University. In our March issue we discussed this at the same time that we reviewed two records of human imitations of bird songs.

Impression one was that we were critical of the necessary lapses between songs recorded outdoors. Quite the contrary. Such lapses are a faithful reproduction of the way things happen in Nature, and when we said that one must "wait expectantly" for the next song, we meant no criticism.

Impression two was that we preferred the imitations to the real thing. Far from it. We said that probably the imitations would prove the more popular, and, with the layman, we still think they will. But this is to be deplored, and we probably should have said so. However fine imitations of bird calls may be, and several whistlers do wonders in reproducing them, they can not equal the birds' own symphony. Humans will never catch the complete nuances of many bird calls, and the ornithological workers at Cornell have made a notable contribution to bird study with these wild recordings. Which gives us another opportunity to commend to your attention Victor Record #25765-A, the Brand recording of native bird songs.

Songs of birds play an important and beautiful part in several interesting Victor recordings. These records are desirable not only for their main musical theme but for the proof they give of the essential melody of avian songsters. These blend perfectly with man-made and man-executed music in such recordings as that entitled "Forest Concert". This was made in Europe with popular melodies played at Reich's Aviary in Bremen and with nightingales and warblers chiming in through the inspiration of the music. This record (V-15-A) is both unique and charming. Another record (V-1-B) was made by the same method with canaries lending their choruses to those of nightingales. On the reverse of this disc a canary presents a solo, and proves itself a singer of operatic rank, at least among the birds.

While we are on the subject of birds on the phonograph records we must not overlook that unique recording of nightingales singing, and other British songbirds awakening, in Beatrice Harrison's garden in Oxted, England (#20968-B). We'll admit that we thought the nightingale a more accomplished singer than it proves to be, so enjoyed more the side of the disc presented under the title of "Dawn in an Old World Garden". We will probably be taken to task for slighting words about these birds. However, try this record and see what you think.

In contrast is an interesting combination of human-made bird calls recorded as interpolations in "Warblings at Eve". The calls are provided by Margaret McKee and are beautifully done, the Victor Salon Orchestra playing this lovely melody by Brinley Richards (#19849-B). A Bluebird record (#B-5999-B) accomplishes a similar effect with "Wedding of the Winds", and the waltz, "Tres Jolie", played with accompaniment by nightingales, blackbirds and canaries.

WILDLIFE CONFERENCE

(Continued from page 297)

field. These were devoted to fish stocking policies; the values of non-game species; the measurement of fish populations; wildlife management on agricultural lands; waterfowl habitat management, and introduced species. The entire proceedings of the Conference will be published in a book, *Transactions of the Fifth North American Wildlife Conference*, copies of which will be available from the American Wildlife Institute, Investment Building, Washington, D. C., for one dollar a copy.

Three resolutions were adopted by the Conference. One placed the delegates on record in favor of the pollution bill introduced by Senator Barkley as amended by the House with an amendment proposed by Congressman Mundt. The Conference recorded itself as opposed to the Barkley Bill unless the Mundt amendment is included. A second resolution asked the passage of the bill providing national protection to the American or Bald Eagle, our National Emblem. The other resolution opposed the carrying into effect of the projected damming of the Willamette River, Oregon, at seven places, since such a project threatens extinction of the largest Chinook salmon runs of the Columbia River.

Memphis, Tennessee, was chosen as the next meeting place of the Conference, and the date was set as February 17 to 19, 1941.

INDOORS AND OUT

(Continued from page 255)

that 'as we move onward, the mind of the American in all the arts will turn more and more toward his native land with its unlimited resources and its untold beauty, all leading toward a new and greater cultural life, richer and more wholesome than that brought with us from Europe."

Mr. Jensen's "siftings" bring his book down to only 110 pages, but I have discussed it at some length and in some detail, quoting all the chapter headings, for example, because it seems to me to carry a message that will be especially interesting and heartening to all conservationists and, I should hope, to all Americans. It recalls the zeal and pure patriotism of Ralph Waldo Emerson, and seems especially apropos in this month that includes one of the patriotic holidays. If it turns the eye of the traveler to the American scene with more appreciation, and gives the landscaper a deeper respect for the natural scene, I believe it will have done us all a good service.

For one thing, this book advances the thought of preserving some prairie area in a natural state. "It seems a pity," says Mr. Jensen, "rather a stupidity, that some section of this marvellous landscape has not been set aside for future generations to study and to love—a sea of flowers in all colors of the rainbow." We have preserved mountain areas, seashores, canyons, and desert landscapes, but we have forgotten to remember the great prairies that were such a strikingly characteristic feature of the primitive continent! They seemed as common as the sea, but the plow changes while the prow is forgotten, and we may even now have difficulty in finding a suitable site for a Prairie National Park. The very hope for it is, nevertheless, another evidence of our deepened respect for the landscape and a heightened patriotism of the noblest order.



BIRD HOUSES

By · Dodson

Designed by an authority on America's birds—a model that will attract every desirable song bird. Quality built with exclusive features. Add charm to your garden. Befriend birds and they will rid your premises of harmful insects. One martin destroys 2,000 mosquitoes a day.

Send for Free Catalog or 10c for 32-page book "Your Bird Friends and How to Win Them".

JOSEPH H. DODSON CO.
604 Harrison Ave. Kankakee, Ill.

Keep Your Dogs FREE FROM WORMS

WRITE FOR FREE BOOKLET No. 652

NEMA WORM CAPSULES

EFFECTIVELY REMOVE LARGE ROUNDWORMS AND HOOKWORMS IN DOGS OF ALL BREEDS AND ALL AGES. DEPENDABLE

Nema Booklet tells you about worms

Write to Animal Industry Dept., Desk N-21-E
PARKE, DAVIS & CO., DETROIT, MICH.
Drug Stores Sell Parke-Davis Products



FOR
Pleasant Memories
MEMORIAL DAY

POCONO MANOR



The top of the Poconos to you Memorial Day. Mighty peaceful here, cool and friendly. No stiff formality. Golf, riding, tennis. Farm-fresh food. Bring the family for a holiday crammed with living, loafing or activities. Go back with pleasant memories.

HERMAN V. YEAGER, General Manager
POCONO MANOR, PA.

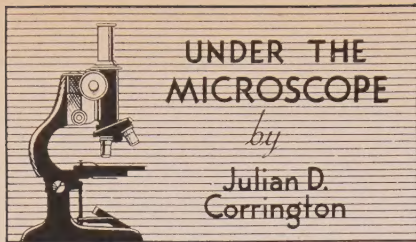
Bean's "Business Man" Shirt



In Sizes that no Store Sells

It is no longer necessary for any man to have shirts made to order. We furnish shirts in both regular and over-size body to fit men of all sizes. Just send us your weight, height, collar size and sleeve length. No factory shirt is better made regardless of price. Collar has "custom stay" which positively prevents corners turning up. Four patterns, sizes 14 to 19, sleeves 30 to 36. Price, "Regular Body," \$1.95, 2 for \$3.75, postpaid. "Over-size Body," \$2.25, 2 for \$4.25, postpaid. Send for large free samples and New Spring Catalog.

L. L. Bean, Inc., 232 Main St., Freeport, Me.
Mfrs. Fishing and Camping Specialties



Frog Flukes

The title of this article sounds as if we were about to discuss some lucky accidents engineered by frogs, but the flukes in question are parasitic worms, and it thus appears more likely that we propose to take you this month on a personally conducted tour through some of the internal caverns of that most victimized of all animals—the leopard frog.

According to our census of subjects favored by readers, the modern and vastly interesting science of Parasitology takes unexpectedly high rank, and it is time we were devoting space to some phase of this important work. As generally defined, the subject is restricted to parasitic animals, the great majority of plants with this habit coming under the scope of Bacteriology. Disregarding isolated cases of parasitism—to be found in almost every animal group—the principal offenders are taken up in three divisions: Protozoology—the study of protozoans or unicellular animals, with such familiar parasites as the organisms



DIPLODISCUS FROM A FROG'S RECTUM. ENLARGED ABOUT THIRTY TIMES. AT THE LEFT, GORGODERA FROM A FROG'S BLADDER. ENLARGED THIRTY TIMES

causing malaria and African sleeping sickness; Helminthology—including parasitic flatworms and roundworms; and Entomology—with many dangerously parasitic species of insects, ticks and mites, as mosquitoes, bot flies and the Rocky Mountain spotted fever tick. Since each of these sciences embraces the study of many non-parasitic species, it is customary to distinguish Parasitic Protozoology from General Protozoology, and so, also, for Entomology.

In future issues we shall take up certain of these divisions in detail. For the present, a start in parasitology can most easily be made by concentrating on one—the flukes. These forms constitute one of four Classes of the Phylum Platyhelminthes, the Flatworms, the other Classes being the Planarians, Tapeworms and Nemertian Worms, the last considered as a separate phylum by some authorities.

Flukes are the sole animals in the Class Trematoda, and all of them are parasites. They have a protective outer cuticle and a muscular body wall, although powers of locomotion in adults are rather negligible. In our illustration of *Diplodiscus*, the mouth is observable at the extreme anterior end, in the midst of the oral (or anterior) sucker, and leading into an intestine of two branches. In this genus the ventral sucker or acetabulum is enormous and located at the posterior end, whereas *Gorgodera* shows its more usual situation, not far behind the mouth. Both suckers are organs for attachment to tissues of the animal preyed upon, known as the host. There are excretory and nervous systems, and in some forms the beginning of lymph vessels, but no blood system or respiratory

organs, and no body cavity. Sense organs may be found in free-swimming larval stages but not in adults, who have no need for them.

These flatworms are classified first of all on the type of life cycle, correlated with the degree of parasitism. The Monogenea attack a single host and have a simple and direct development. Mostly they are ectoparasites (external parasites) on fishes and turtles, and have hooks to aid in attachment. Some of these go into the mouth cavity and cloaca and even up into the urinary bladder, thus becoming endoparasitic (internally parasitic). Such species indicate how the completely endoparasitic worms of the larger and much more important Order Digenea have arisen, by gradually encroaching more and more on cavities of internal organs.

An average life cycle of the digenetic flukes, embracing two or more hosts and including an alternation of generations, may be described as follows: fertilized eggs, already in early stages of development, pass out of the final host (that which the adult fluke infects) with its feces and must fall into water or at least a very wet situation, as a marshy meadow, if they are to continue. The first larval stage, the miracidium ("little boy"), then escapes from the egg case and swims about in search of a particular species of snail, which varies with the species of fluke. By means of glandular secretions the miracidium digests its way into the mollusk and there loses its locomotor cilia, its eye-spots, primitive gut and other organs, becoming a greatly simplified sac-like object called the sporocyst.

Within the sporocyst a large number of germ cells now develop rapidly into a second

larval type, the *redia* (honoring Francesco Redi, 17th C. Italian scientist), which is again provided with a number of organs,



difficult to work out. Sometimes as many as four hosts are involved, and it is easily seen that the chances of any one individual fluke, in whatever stage, meeting all the demands of such a schedule and completing the cycle are extremely remote. Hence the great elaboration of the reproductive system in larvæ and adults alike. Most of the body in mature flukes is given over to genital organs and both sexes are present in one individual as a rule (hermaphroditism). As many as half-a-million eggs may be liberated by a single worm. The miracidium is a distributing and not a reproducing stage, and must contact a water snail within a few hours or it will die. Within the snail, sporocysts and rediæ again multiply the number of individuals, each sometimes producing more than a hundred daughter larvæ in anticipation of the next free-swimming and hazardous event in the cycle, the liberation of the cercariæ. These in turn are distributive and not reproductive and must usually gain the final host within a very brief period.

An interesting comment on life cycles of these and other internal parasites is that, unlike all other kinds of animals, they must be eaten in order to live!

As to situations attacked within the bodies of hosts, these worms may be grouped as blood, lung, liver, intestinal, rectal and bladder flukes. Many species are highly dangerous invaders of man, especially in the Orient, but as specimens are difficult to secure in America, except by purchasing prepared slides from biological supply houses, the frog offers very favorable collecting grounds for flukes that are fully as interesting as any, and make excellent whole mounts by the methods described for *Planaria* in our June-July, 1939, issue.

Etherize or pith a frog, meanwhile having ready three watch glasses containing normal saline solution (0.6% salt in water). Dissect the frog rapidly, removing both lungs intact to the first watch glass, the rectum or large intestine to the second, and the urinary bladder to the third. In each case, tease and tear these organs to pieces with needles and, if flukes are present, they will be encountered during such preparation and will be noted in movement. They are readily visible, averaging around half-an-inch in length. Not every frog is parasitized, but most of them are, in the greater part of the United States. Observe the flukes while alive, then make stained whole-mount slides, one specimen per slide.

PNEUMONECES FROM THE LUNG OF A FROG. ENLARGED FIFTEEN TIMES

such as those of digestion and excretion, but in which most of the space is devoted to production of more germ cells. These in some flukes give rise to one or more additional generations of rediæ, but in most cases form a third larval stage, the *cercaria* (tailed), shaped like a tadpole, with a swimming tail, and the two suckers seen in adult worms.

Usually this cercaria becomes free-swimming for a short period and, escaping from the intermediate host—the snail—searches for the final host, which it penetrates, or encysts in either a second intermediate host or sometimes on vegetation, the encysted form being a *metacercaria* (beyond the cercaria). If eaten by the appropriate final host, the metacercaria escapes from its cyst and attains that part of the body to which the species has become adapted, and there matures to the adult estate.

These life cycles are complicated and dif-

Trade Notes

A new book on the microscope itself is always worthy of special attention in these columns, and so it is with pleasure that we announce this month publication of *The Microscope*, by Roy M. Allen, well known consulting microscopist. The author has enjoyed a long and wide experience in practically every field covered by microscopy and was for several years President of the New York Microscopical Society.

The chapter headings are: Historical, Optical Principles, Modern Instruments, Illumination, Testing Objectives, Getting the Most out of the Microscope, and Preparation of Material. It will hence be seen that the work is primarily concerned with the instrument itself rather than with the technique of slide-making. There is a splendid bibliography and a carefully detailed glossary, and the

RESEARCH SCIENTISTS USE BAUSCH & LOMB MICROSCOPES

At right is the Bausch & Lomb DDE research microscope. With usual lens equipment it sells for \$774.50. It is doing useful work in many of



the world's most famous hospitals and research laboratories. At left is the Model R, a microscope built for amateur use. It was designed by the same scientists responsible for the DDE, is built in the same factory, to Bausch & Lomb precision standards. Complete with case and 455-page book written by Dr. J. D. Corrington, it sells for \$21.



FREE BOOKLET tells how to go about microscopy as a hobby, describes Bausch & Lomb microscope equipment for the amateur. Write for your copy.



BAUSCH & LOMB, 377 Bausch St., Rochester, N. Y.

BAUSCH & LOMB

MIRAKEL
DAYLUX
BINOCULAR



**POCKET PRISM
NATURE GLASSES**

New and Used Field-glasses, Telescopes, Microscopes; all Makes, types and sizes, to fit all pocketbooks. Glasses exchanged; repair work guaranteed. Catalogue free.

J. Alden Loring Box K-2 **OWEGO, N.Y.**



What are you Leaving To Them?

This may prove a vital issue affecting America's future and Americanism. The Izaak Walton League of America is a national organization of conservationists, coordinating local and state objectives into a unified, long-range national program for a better outdoor America. If you believe in a program which will leave a little of primitive America for your children, and restore to the proper environment some that has been destroyed, THEN JOIN YOUR LOCAL CHAPTER OR WRITE FOR particulars to:

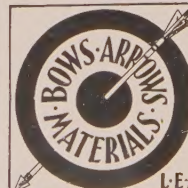
Izaak Walton League of America

Defenders of Woods, Waters and Wild Life
1167 Merchandise Mart, Chicago

Do You Collect Sea Shells?

Then you need my new catalogue with 1400 illustrations, only \$1.00. Send for your copy at once. Price refunded on first order of \$10 or over. Handbook for Shell Collectors, a real manual, with 2,200 illustrations, cloth bound, \$2.50. Largest stock of classified recent shells in the world.

WALTER F. WEBB
202 Westminster Road Rochester, N. Y.



HANDBOOK—How to Make and Use Bows and Arrows—90 Pages well illustrated (with catalog) 35c.

CATALOG—100 pictures—color spread—Instruction Folder. 10c.

CATALOG alone 5c. Stamps or Coin.

L. E. TEMMLER QUEEN/VILLAGE N.Y.

work is well written, illustrated and published.

While scarcely for the beginner, anyone who has discarded his swaddling clothes in microscopy can tackle this book with much pleasure and benefit. The last chapter, on technique, is too brief and general to be of much help, and includes none of the newer methods that are now rapidly replacing the older and standard procedures, but Mr. Allen has done as good a job as possible within the confines of a single volume of average size and cost. Technique alone can fill many separate books, and the author has been obliged to select his material accordingly. Recommended to all who want to learn optical principles and correct understanding and operation of their microscope. Pages viii, 286; plates XVII, figs. 82. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York City. \$3.00.

Our offering this month will appeal especially to teachers, but will likewise attract all those who would like to try their hand at a fascinating method of experimentation. *Insect Parasites and Predators* is the title of a 20-page illustrated booklet describing 14 different species of parasitic insects, with catalog listings for ordering the living parasites, host material, and breeding supplies, together with full directions for work with this unique material.

In connection with our feature article this month, introducing the science of Parasitology, it may be explained that many insects, particularly certain tiny wasps, are among the most beneficial insects known, since they attack and destroy great numbers of insect pests and enemies to agriculture. A typical habit is for the female parasite to deposit her eggs within the eggs or larvæ of the host insect. When the larval parasite hatches it then devours the host parasite. This marvelous procedure—designated as the biological method of controlling insect enemies—has been known to scientists for some time and is mentioned in most textbooks, but the material itself has not until recently been available to any save research workers. As a school exercise or serious personal hobby, work with these midget helpers of mankind will prove highly educational and entertaining.

The leading spirit in developing these supplies so as to make them widely available at low cost is ASAM member Dr. A. W. Morrill, President and Manager of the California Biological Service, 1612 W. Glenoaks Blvd., Glendale, California. Add this firm to your list of biological supply houses (Feb., 1938, issue) and send a 3c stamp to Julian D. Corrington, *Nature Magazine*, 1214 Sixteenth St. N. W., Washington, D. C., for a copy of this booklet.

Our recently concluded series on bacteriology has brought numerous requests for reference works on the subject and we have found one that we believe entirely suitable for anyone save possibly the advanced expert. This is the third edition of *Elementary Bacteriology* by J. E. and E. O. Greaves, issued in 1938, and thoroughly revised and brought up to date. The volume appears of moderate size, yet contains 562 pages, with 147 figures, several in color. The subject is presented in very complete fashion, simplified language, interesting and easy to read. The medical side is fully covered, but not to the exclusion of other important phases,

as soil, water and dairy bacteriology. An historical background is included with each subdivision, including portraits and biographical sketches—a feature much to our liking. You will like this book too, and get an immense amount of both theoretical and practical information from it. W. B. Saunders Co., West Washington Square, Philadelphia, Pa. \$3.50.

From the South-Western Biological Supply Co., P. O. Box 4084, Dallas, Texas, we are just in receipt of a clip of 8 pages listing their latest offerings of living plants, animals and eggs, aquarium and terrarium specimens and supplies, and featuring low-priced units such as complete woodland, bog or desert terrarium sets.

Teachers and those who are teaching themselves in histology can well consider the *Laboratory Guide in Medical Histology* of Dr. Alexander V. Arlton. This is a mimeographed, paper-bound volume of 59 pages, giving complete and practical directions for a course of study in histology, whether or not the aim of the course is medical or biological. All of the tissues and organs are considered. The directions tell the student what to look for on each slide and are concise, avoiding the inclusion of textual material. We recommend this guide to everyone interested in histology. Dakota Wesleyan University Book Store, Mitchell, S. Dak., \$1.00.

The United States Testing Company, Inc., announces a merger with the equipment, staff and associates of the E. E. Free Laboratories at 175 Fifth Ave., New York City, these laboratories to be retained and operated as the engineering and research division of the Company. Mr. Earl A. Graham, of the Free Laboratories, will continue as manager of this division. The general offices of the Company are at Hoboken, N. J., and the president is D. E. Douty.

Mr. Fred A. Mennerich, formerly Chief Microscopist for the U. S. Testing Co. and secretary of the New York Microscopical Society, is an investigator in the textile field of long experience and wide reputation. He has recently opened up his own Textile Laboratory at 42 Roosevelt Ave., Jersey City, N. J., and invites business and correspondence. His work includes fiber identification, analysis of composition of mixed samples, measurements, counts, sectioning and photomicrography. Mr. Mennerich is a graduate of the University of Wisconsin and author of many professional papers in the textile field.

A fine technique manual for advanced workers is the *Handbook of Histological and Cytological Technique* by R. R. and S. H. Bensley of the University of Chicago. The senior author is a noted cytologist and here publishes many of his methods for the first time, and they are models of exactness and completeness. Part I takes up techniques for fresh tissues and Part II for fixed materials. There are abundant formulae and full directions for many advanced procedures in fixing and staining; paraffin, celloidin and freezing sectioning; general discussions of principles involved; detailed instructions on sharpening the microtome knife; and a large number of

special methods, as for staining nerve cells, microchemical reactions, and culturing living cells from the spleen. The 167 pages are notebook size with multiple-ring binding, blank spaces for personal notes, large print and a water-resistant cloth cover—a most convenient and practical form for laboratory use and reference. The University of Chicago Press, 5750 Ellis Ave., Chicago, Ill., \$2.00. Postpaid, \$2.10.

American Society of Amateur Microscopists

President, Simon Henry Gage, Ithaca, N. Y.

Permanent Secretary, Julian D. Corrington, Chestertown, Md.

Official organ, *Nature Magazine*, Washington, D. C.

Address all communications concerning the Society to Dr. Corrington at Chestertown, Md. Application for Membership form sent on request. Dues, one year, fifty cents; two years, one dollar.

This issue marks the first anniversary of the ASAM column in *Nature Magazine* as a regular entry. We have covered a lot of territory in the past year and are going along strongly, but still have a lengthy road before us in our efforts to organize all those persons seriously interested in microscopy into a cooperating group—exchanging ideas, helping the beginner to take his first steps, arranging local clubs, and in other ways serving as a central clearing house to the end that everyone will benefit and advance in knowledge in this great field.

Something like 450 copies of Bulletin #2 have been mailed out to our membership, but we have been looking ahead and have prepared nearly twice this number to take care of future enrollments. Our journal was distributed from England to the Philippines and from Saskatchewan to Puerto Rico. According to letters received, this issue made a good impression and the general opinion seems to be that the articles were well balanced, with something to appeal to every class of member, and that a satisfactory beginning has been accomplished. Our aim will be to make each succeeding issue better than the last.

In case you are among those who did not receive Bulletin #1, let us state that this was no more than a report of progress and a roster of members, both now entirely obsolete. Such a roster will be revised from time to time and sent to all members. Now we are busy with plans for #3 and have already received two excellent articles. Garry Weingarten's series on the technique and microscopy of textile, cordage and paper fibers will be continued, and we have contracted for a large number of splendid illustrations to be used with his final installment. Harry Ross will make an attractive offer of free materials for all members.

Our affiliation with the State Microscopical Society of Illinois has been completed and other relationships of this character are now being considered, while several new Chapters are in process of formation. The next publication of the Society will be devoted to aids and suggestions for the organization and maintenance of Chapters, with sample programs of activities.